

Flight, January 28, 1911.

# FLIGHT

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The British Michelin Trophy for aviators, presented by the famous Michelin tyre firm, and won for 1910 by Mr. S. F. Cody on his Green-engined biplane. The original trophy will be placed in the keeping of its holder on Tuesday evening next upon the occasion of the Royal Aero Club's Annual Dinner at Prince's Restaurant. On the base of the "Cup"—the design and work of M. P. Moreau-Vauthier—is the legend: "The Man, by the Aid of his Aeroplane, overcomes the Attraction of the Earth."

# **NOMENCLATURE IN FLIGHT.**

READERS of FLIGHT will doubtless remember that the question of adopting some means for securing a sane and permanent system of nomenclature in connection with aviation and its attributes, was one of the earliest subjects to which we devoted ourselves in the infancy of this journal. As far back as February of 1909—and it is far back as the history of the movement is written—we urged the powers that be to set to work upon the preparation of a glossary of aeronautic terms which would prevent the misunderstandings and confusion which must necessarily be attendant upon allowing things to drift and a haphazard system of terminology to grow up by itself, as it were. In the same issue—of the 20th of the month in question—we published a fairly comprehensive glossary of technical terms and words which we ourselves considered best adapted to the immediate needs of the moment. Generally speaking, our effort to put things on a straightforward basis was met with approval though it was hardly to be expected that it could pass without criticism. In a movement so new as aviation there are many things that need to have names coined for them, and just as necessarily it follows that there are almost as many opinions as there are individuals upon just exactly what name should be given to each debatable subject.

Of the necessity for such a glossary as we have always advocated there can be no two opinions; nor can there be upon the fact that the movement is most favourably situated for the preparation of a nomenclature system which shall be universally recognised and adopted, so that in the time to come there shall be an entire absence of confusion of terms, there being but one name for one thing. How desirable this is it is hardly necessary for us to point out. We need only take instances from any one of a dozen industries or sports to see the confusion which has been allowed to arise through a want of proper system at the beginning. To take even so comparatively humble an example as the bicycle, there are often as many as half-a-dozen different names current and accepted for a single one of its component parts, and so great has the confusion become that only as recently as three years ago the nomenclature was revised and a specific name allotted to every individual portion. Of course, this revision failed in its effect, for it is obviously one thing to allot a cognomen to a part or even an individual at the beginning, but quite another when it has been known indifferently by any one of a dozen during a period of years. The motor car likewise gives us many a useful object-lesson in the desirability of hall-marking every part of its economy by an easily recognisable name. In the early days of the movement almost every constructor was a law unto himself. He made his car and he gave every part of it the name he thought it ought to have, irrespective of what others were doing.

In aviation there is still plenty of time to avoid this pitfall, for the science has not yet arrived at that stage when its ordinary terminology has passed into the vocabulary of the man in the street. That time, however, is fast arriving and against its arrival a proper system must be prepared—one which will ensure that the name of every attribute of flight will carry its meaning plainly on the face of it. What is being done to ensure that most desirable state of things? Fortunately, the question can be regarded without misgiving. Last week we published the first portion of a report of the Aeronautical Society's Technical Words Committee, in which is

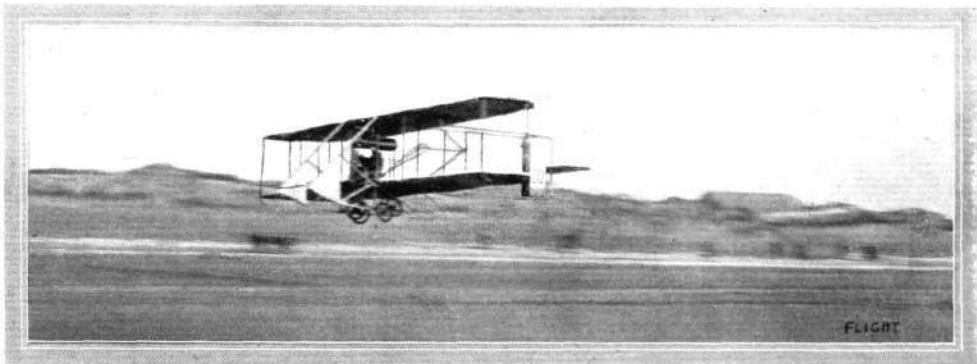
ultimately to be given a glossary of all words applicable to flight, divided into three sections: "General Terms," "Principal Dimensions," and "Principal Parts." On the whole, the names and definitions so far set forth are not dissimilar to those we ourselves advocated two years ago, and for that reason, if for no other, we do not propose to criticise them. Also it would be invidious to do so, for after all many of the terms that can be applied simply resolve themselves into a question of personal preference of one of two or three alternatives. Where the Committee, therefore, expresses its preference for any one which we, ourselves, might not have felt inclined to select, the desire to see the whole of flight terminology arranged on a single basis plan impels us to accept loyally the ruling of the Committee. The report before us is only preliminary, as we have already noted, and the glossary is therefore a long way from complete; but in this connection it must be remembered that the preparation of a comprehensive dictionary of terms is necessarily a slow and laborious task. Endless argument may centre about the selection of a single word, where there are two or more which have passed into currency, all of them possibly of equal suitability and each of them having its own advocates. So far as they have gone, the Committee have done good work, and it is now for us and for other writers to assist by passing the selected names into the regular vocabulary of flight, to the entire exclusion of others. It may be difficult at first to drop the term one has always used in speaking of a particular thing, but it is well worth taking the trouble if it will help—as it will—to keep clear of future confusion.

We had said that we did not intend to criticise the work of the Committee, nor do we intend to do so. But there is one point on which we would venture to give a word of warning. In connection with the official glossary—if we may give it that name—our attention was called by a member of the Committee to the fact that it consisted entirely of good English words. Now, this is all very well in its way and we are by no means in agreement with those who make a veritable affectation of interlarding their conversation and their correspondence with foreign terms. But there is a limit to the use of King's English, which is reached the moment we begin to coin an unsuitable word to describe a thing for which there is a proper and adequate word in another language. Take the word "chassis" as applied to automobiles, for example. It has passed into current English simply because we had not a word in the language which was anything like as suitable in its application. It makes one shudder to think of the many bastard terms that might have been coined to describe the agglomeration of parts which constitute the motor car minus its body if the purists had been allowed to have their way—"running-gear" for example, as they have it in America. By all means let us have good English words, provided they are better or even as good descriptively as those in use elsewhere. Where our own dictionary does not supply a deficiency, equally let us go outside of it for what we want. After all, English is a hotch-potch of other languages, and, sooner or later the language of the Earth will be a hotch-potch of English with other modern languages (or hotch-potches). The more carefully selected the hotch-potch the nearer is likely to be that universal language for which the commercial world is pining.

## MR. OGILVIE'S WRIGHT BIPLANE.

THROUGH the courtesy of Mr. G. F. Mort, of the New Engine Co. (N.E.C.), we are able to publish this week a few very interesting photographs of Mr. Alec Ogilvie's Wright biplane, taken on the Camber sands near Rye, after his recent experiments with the new two-stroke engine that Mr. Mort designed. These trials, as our readers know, very nearly resulted in his winning the British Michelin Cup, for at one

has been essentially changed in type by the substitution of a tail for the front elevator. There still remain in front, however, a pair of "blinkers," which take the place of the half-moon panels formerly fitted between the panels of the elevator. These blinkers are situated at the front ends of the skids and fill the corners made between the skids and the oblique struts that truss them to the upper front spar.



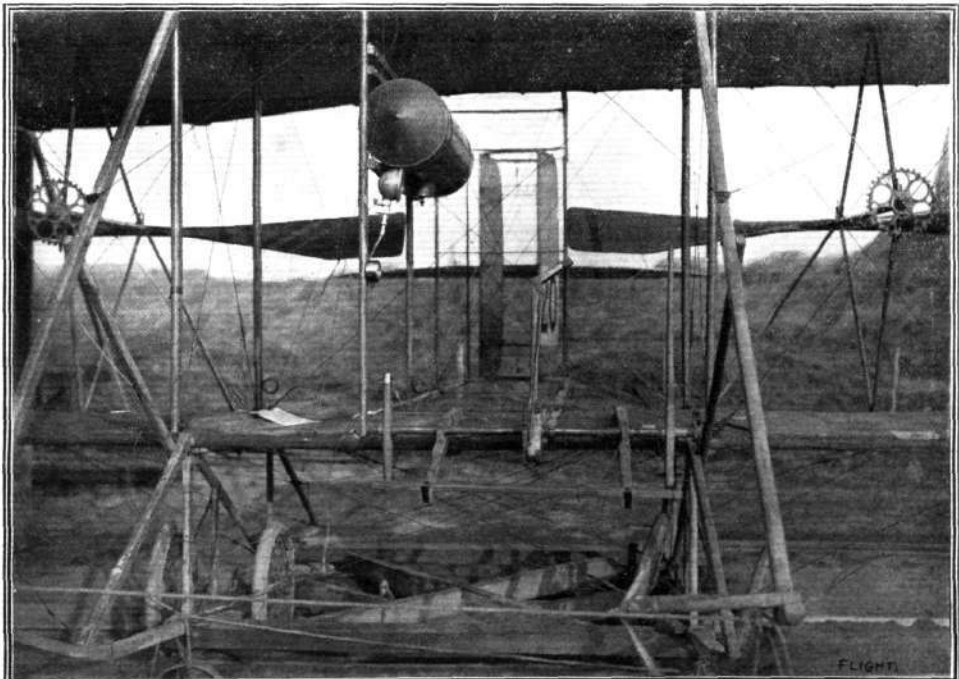
Mr. Ogilvie's Wright biplane in flight, showing the "blinkers" in front.

time he headed the list of competitors. The photographs in question were taken after the removal of the engine and happen to be the more interesting on that account, because they show, more clearly than would otherwise be possible, the new features that have been introduced into the machine since Mr. Ogilvie's return from America, where he took part in the Gordon-Bennett Race on behalf of Great Britain. It will be observed, first and foremost, that the machine

Their purpose is, of course, to make the machine sensitive to the rudder.

The tail plane that substitutes the front elevator is a monoplane and is rigid for the forward portion of its chord. Through the action of the elevator lever its effective angle can be varied in order to control the machine in a vertical plane.

One very interesting circumstance associated with this tail plane occurred when the new two-stroke engine was



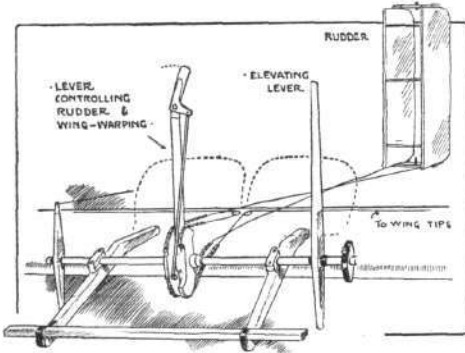
View showing the position of the rudder on Mr. Ogilvie's Wright biplane when the handle of the control-lever is turned over as illustrated.

fitted. It is not generally recognised that the Wright motors run in the reverse sense to most engines, and the N.E.C. motor, following orthodox practice, consequently reversed the direction of rotation of the propellers on the Wright biplane. This caused a reversal in the trend of the spiral slip stream and upset the adjustment of the attitude of the tail plane to such an extent as to eventually necessitate a very material alteration before the effect was compensated. The new tail is far less sensitive in its action than was the

The elevator is still operated by a lever at the pilot's left hand, which lever is moved to and fro and is held in any desired position automatically by the action of a friction-brake embracing a drum on the shaft to which it is attached. The purpose of this constructive detail is to enable the elevator to be adjusted to a certain angle, say, for instance, for steady climbing, and to leave it there for any desired duration without attention.

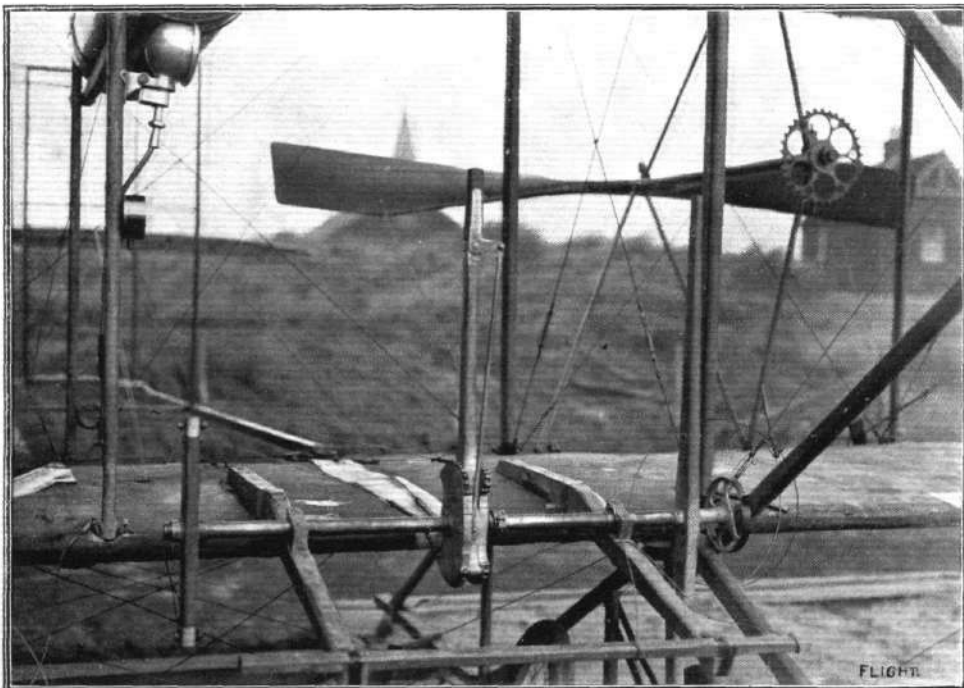
Another most important innovation on the machine is the Orville Wright type of control-lever for the rudder and warping movements. The operation of this lever is essentially different from that used in the Wilbur Wright system and we have even heard it said that Wilbur Wright himself can no longer fly since all the Wright machines are now being fitted with his brother's device. But we have heard stranger things than this of Wilbur Wright, and whilst telling a story of this sort it is perhaps even more appropriate to tell another that is touching on the same point, although it goes back to the beginning of time when Wilbur Wright was learning to fly at Le Mans. Most people never knew that he was learning to fly there, but it is the truth nevertheless, and the reason why is precisely the reason for which he is said to be unable to fly now. He was unacquainted with the control of his own machine. When the Wrights were developing their aeroplane they developed the details of control by degrees, and the two brothers, having different tastes in this matter, suited their own convenience in design. Wilbur Wright was not altogether satisfied with his own apparatus and just before going to France evolved the universal lever with its diagonal and elliptic motions as a scheme that seemed to him best suited to his requirements. He never had a proper opportunity of practising with this control before he started flying at Le Mans, and a great deal of the one step at a time procedure, which characterised his method at that date, was doubtless due to this circumstance.

The Orville Wright system is simpler than the Wilbur Wright control, but necessarily confusing at first to those who have learned to use Wilbur's lever. On the other hand, Mr. Ogilvie very quickly accustomed himself to its



Sketch illustrating the control of Mr. Ogilvie's Wright biplane.

old front elevator and Mr. Ogilvie tells how, when receiving instruction in the new control during his visit to America, the elevator lever was put hard over in each direction in order that he might be assured on this point. The machine stood on its head and then on its tail, as he described the effect of this manoeuvre, but remained under control; which certainly would not have happened with the old system.



View of the warp and rudder-control lever on Mr. Ogilvie's Wright biplane. On the right is the elevator-lever controlling the tail, and by its side is the friction-brake that holds it in position.

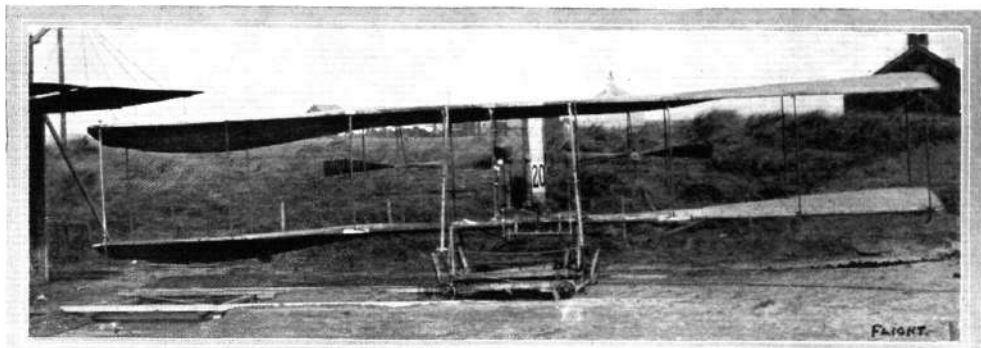
peculiarities under ordinary flight conditions and now feels quite confident of doing the right thing unconsciously in an emergency.

The lever in question is characterised by a hinged handle that is moved sideways by twisting the wrist when it is desired to operate the rudder independently of the wing warping. Normally the stem of the lever is moved to and fro with the handle vertical. This action balances the machine without causing it to swerve from its straight path, for the rudder and warping mechanism are connected so as to operate simultaneously and in the correct relative degree.

For special manoeuvres that require a greater or less degree of rudder action for a given amount of warp, the handle is merely moved over to one side or the other, which may

tioned then locks the rudder disc to the warping disc, as may be understood by a glance at the accompanying sketch, which shows why it is obviously impossible for the warping disc to move without the rudder disc unless the handle is thrown over simultaneously and to an extent sufficient to exactly neutralise the lock.

Speaking of warping, one of the most interesting photographs ever published of the Wright biplane is that among those herewith, which shows the maximum extent of warp possible. The position illustrated corresponds to the lever being pushed right forward with the handle vertical and it will be noticed that the rudder has been turned to an extent sufficient to show the number 20 on the face of one of its planes.



Full warp on Mr. Ogilvie's Wright biplane. Note the position of the rudder. The combined movements are the result of a permanent interconnection between the two mechanisms, and are effected by simply pushing the control lever forward.

be done without disturbing the position of the lever itself. A glance at our illustrations shows how these interconnections are carried out.

The handle carries a small bell-crank-lever that is connected to a free disc on the operating rock-shaft, by a rod. When the handle is moved independently of the lever, this disc is rotated independently of another similar disc alongside it and the rudder to which it is connected moves independently of the wing tips that are connected to the other disc.

The other disc itself is attached rigidly to the stem of the lever and when the lever is moved to and fro both discs rotate in unison, for the connecting-rod already men-

Whilst on the subject of control, it is interesting to point out that the arrangement of the levers on the Wright biplane is such that the pilot may be either right or left-handed. Suppose, for the sake of example, that he sits in such a position as to use the warp and rudder lever with his right hand, then his pupil will be trained to use the same lever with his left hand, because there is only one such lever on any Wright machine, although the elevator levers are in duplicate. The reason for this is that the duplication of the warp and rudder lever would involve serious complication in the various connections, whereas the elevator connections are not altered in the least by the presence of another lever at the opposite end of the operating rock-shaft.

## ELY'S FLIGHT TO

THE recent demonstration by Mr. Eugene B. Ely of the possibility of aeroplanes working in conjunction with the Naval arm of the service has brought home to the authorities more rapidly the importance of flying machines as an auxiliary for scouting purposes than the most sanguine enthusiasts could have hoped for. It will be recollected that last year in *FLIGHT*, Mr. Griffith Brewer put forward his views and suggestions in regard to the attempting of this feat, when, as he pointed out, there was little doubt that sooner or later it would be accomplished and ultimately become an everyday event. It is only recently that we reported a more or less successful attempt from America in this connection, and by Mr. Ely's work on Thursday, the 19th inst., in San Francisco on a Curtiss biplane, it has now been finally proved that there are no insurmountable difficulties in utilising aeroplanes for the Navy in practical work which may very greatly assist Naval commanders in settling their line of action when engaged in some important movement. Rising from Selfridge Field, near San Francisco, Mr. Ely, after flying over the city and the warships in the Bay, finally came to rest on the deck of the cruiser "Pennsylvania," where a special landing superstructure had been previously erected, similar to the one which was illustrated in *FLIGHT* on November 26th last.

He started at 10.45 and was flying over the Bay within a few minutes, and although it was misty he continued his

## WARSHIP'S DECK.

flight at a fairly low altitude, ultimately sighting the "Pennsylvania," with which vessel he was kept in touch by the hooting of the siren. Before actually coming to rest on the deck of the vessel he flew past her for some hundreds of yards, then, circling back, he rose comparatively slowly, keeping up to the wind towards the stern of the vessel and finally settling down with skilful judgment on the special platform. The successful issue of the attempt was announced by the blasts of the "Pennsylvania's" siren, this being taken up by the whole of the vessels in the harbour. The wooden superstructure measured 130 ft. by 50 ft. wide, and when the Curtiss machine first touched the deck she was travelling probably at 40 miles an hour. A series of rope brakes weighted with sand bags were so arranged that they were caught in special hooks attached to the biplane and gradually brought the machine to rest within about 60 ft. from first contact. The entire flight occupied about 16 mins. In exactly 1 hour after a lunch in his honour, provided by Captain Pond, Ely once more took his seat on the Curtiss and was immediately away again at high speed, with a gentle drop towards the water before rising high over the ships in the harbour, back on his return journey to Selfridge Field, passing en route at an altitude of about 2,000 ft. over San Francisco. On alighting he was vociferously cheered by the officers of the 13th U.S. Infantry Regiment, who were in camp on the field.



## AVERAGE FEBRUARY WEATHER.

By T. F. MANNING.

In almost every respect February weather shows a decided improvement on that of January. There are fewer gales, fogs, snowfalls and rainy days, and considerably more sunshine. Still, like January, this month is characterised by the three weather phenomena most dangerous to the aviator—gales, fog and snow.

Gales, however, are one-fifth less numerous than in January, fogs one-fourth, and snowfalls one-fifth less numerous.

If this month should approximate to the average February of one hundred years past, we have more reason to expect one or two gales during the first twelve days and the last six days than during the intervening period.

Fogs, on the contrary, are less frequent in the beginning of the month, more frequent in the middle, and then rapidly diminish in number.

Snowfalls are pretty equally distributed throughout the four weeks.

The average number of gales in the whole month is 2, of fogs 3 and of snowfalls  $3\frac{1}{2}$ .

Hail begins to grow more frequent after the middle of the month, but the chances of a fall are very slight—only 6 to 10.

A thunderstorm occurs in February only once in nineteen or twenty years, that phenomenon reaching its minimum of frequency in February.

As to rainfall, February shares with March the distinction of having the least amount. And in the number of rainy days (a fall of at least one-tenth of an inch) February is one of the good months, October to January being the worst.

The improvement of February on January may be seen from the following figures, which give the average number of events occurring in a period of ten years:—

	January.	February.
Ten years' gales .. ..	25	20
.. snowfalls .. ..	39	32
.. fogs .. ..	40	30
.. dense fogs .. ..	8	6
.. hailstorms .. ..	$3\frac{1}{2}$	$6\frac{1}{2}$
Hours of sunshine (London) during the month .. ..	42	56
Rainy days .. ..	15	$12\frac{1}{2}$

In hours of sunshine (at Greenwich) February shows an increase of 33 per cent. over January; but as regards the amount of cloud the two first months of the year are equally bad. On nearly half the days of February we have either very much cloud or an entirely overcast sky; while on less

than three days, taking the average of many years, is the sky cloudless or nearly so.

Cold is little less severe than in January, and from the 7th to the 10th we will probably experience a very bitter spell, with northerly winds, one of half-a-dozen weather events which occur with singular regularity almost every year.

The percentage chances of the various weather phenomena for each day in February are given in the following table. It must be remembered that this does not pretend to be a forecast; but being based on records for a great many years past, it gives us some idea of the probabilities.

Table of Weather Phenomena in February.

The figures show how many times in a hundred years each event occurs. The odds against any event on a given day would be as 100 to the figure in the Table:—

Day.	Gales.	Fogs.	Dense Fogs.	Snow-falls.	Hail.	Thunder.
1	9	$10\frac{1}{2}$	$3\frac{1}{2}$	15	1	1
2	$7\frac{1}{2}$	$10\frac{1}{2}$	2	17	—	—
3	3	$10\frac{1}{2}$	1	9	—	—
4	$4\frac{1}{2}$	8	$4\frac{1}{2}$	9	1	—
5	$6\frac{1}{2}$	9	2	9	$1\frac{1}{2}$	—
6	6	14	—	12	$1\frac{1}{2}$	—
7	12	8	2	$7\frac{1}{2}$	4	—
8	12	8	2	6	4	—
9	9	14	$3\frac{1}{2}$	10	3	—
10	6	8	2	10	$1\frac{1}{2}$	—
11	$10\frac{1}{2}$	9	2	18	3	1
12	12	13	2	7	$1\frac{1}{2}$	—
13	6	9	1	16	2	—
14	$4\frac{1}{2}$	15	1	9	5	—
15	5	13	2	$10\frac{1}{2}$	—	—
16	6	13	2	10	3	—
17	$6\frac{1}{2}$	16	2	12	$1\frac{1}{2}$	1
18	6	15	1	15	2	—
19	5	14	1	13	3	—
20	$5\frac{1}{2}$	9	1	12	$1\frac{1}{2}$	—
21	6	$11\frac{1}{2}$	1	15	2	—
22	$6\frac{1}{2}$	16	2	12	4	1
23	$6\frac{1}{2}$	9	$3\frac{1}{2}$	12	$4\frac{1}{2}$	1
24	$6\frac{1}{2}$	7	2	9	4	—
25	$7\frac{1}{2}$	7	$3\frac{1}{2}$	$13\frac{1}{2}$	$4\frac{1}{2}$	1
26	12	6	1	12	—	—
27	9	8	1	12	3	—
28	$6\frac{1}{2}$	7	2	12	4	—

## “ALL THE WORLD'S AIRSHIPS.”

In starting out on parallel lines to do for the aeronautical industry what he has done so well for those interested in naval matters, Mr. Fred T. Jane in his remarkable work under the above title took in hand a stupendous task and one at which many a bold statistician might well have quailed. When the first edition of “All the World's Airships” appeared last year, although naturally there were several shortcomings inevitable from a first essay in such work, it was seen that Mr. Jane had set about his task in a very determined manner and had in fact got the general scheme of arrangement well in hand. The second issue, that for 1910-11, now lies before us. On turning over the pages it is at once obvious that the compiler has been at extraordinary pains to bring the publication right up to date, although at the present time when so many experimental machines are building and others being altered in design almost daily, it is well-nigh impossible to keep quite abreast of such developments.

For all that the book is practically indispensable as a work of reference to those who wish to have ready to hand leading information on this subject, as it forms a catalogue of all the aeroplanes and airships in the world and a good many more. There is little doubt that Mr. Jane has well laid the foundation of a hardy annual, which will take the place of “All the World's Fighting Ships” when Dreadnoughts and craft of that nature shall be deemed of secondary importance in the art of national defence. Nowadays the term

“airships” has come to be applied mainly to dirigible balloons, but Mr. Jane uses the term in the broadest sense, and so, as we have said, his work includes particulars of all types of mechanically propelled craft used for the navigation of the air, whether for fighting purposes or merely for sporting and scientific uses. Under the heading of each country of the world, particulars are given of the aeroplanes and dirigible balloons owned in that country, and wherever possible these details are illustrated by a photograph and supplemented by a silhouette drawing. In connection with these sketches it is of considerable moment that they are all drawn to the same scale, thus making it an easy task to compare any one with another. Lists are also given of the owners of each type of machine. Part 2 is a list of the various motors specially made for aeronautical purposes, and here again, wherever possible, a photograph is included of the engine. Part 3 is an aerial “Who's Who,” but here all too many names have been omitted which should certainly find a place, while the summary given concerning many that do find a place could very well be amplified. Lists are also given of the manufacturers and agents for aeroplanes and airships, and in like manner for the different fittings therefor, although we fancy this portion of the work has been treated in rather too wide a way. The book is published at the price of 21s. net, by Messrs. Sampson Low, Marston and Co., Ltd.

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the extraordinary time of 16 minutes, his descent being on the racecourse.

### Florida to Cuba by Aeroplane.

AN attempt is to be made, according to report from New York, to fly from Key West, in Florida, to Havana. In the event of the flight being made arrangements will be carried out for torpedo boats to be in waiting *en route*.

### Flying Across the Isthmus of Panama.

In addition to Mr. Harmon, who is credited with the intention of flying across the Isthmus of Panama, following the line of the Canal, Bielovucic and Chailley are the latest aspirants for the same feat, the latter intending to use a Voisin machine.

In the meantime Bielovucic is credited by cablegram with having accomplished a 25 miles flight over Lima, in Peru, in

## THE USE OF ACCIDENTS.

By "L'ESTRANGE."

"We learn by our friends' misfortunes" is an old adage, and it is unfortunately very true in flight.

Appended is a list of those who have given their lives for the cause of the new science, together with the brief reason for their mishap. In order to see clearly the many different causes I have drawn them up into the form of a table.

Most of the classes are subdivided, but there is one heading which stands predominant. I refer to that which I have labelled "Circus Feats." These include all dangerous or unnecessary feats which have terminated fatally, and in many cases are due to the spectators more than to the victim, who has probably killed himself for their amusement.

The weather we shall always have with us, but with the increase of speed wind will have less effect; and doubtless, we shall soon learn the science of air-pockets and streaks. The case of Wachter was probably caused by the rain warping some vital part of his machine. Faulty and inexperienced steering have also contributed.

In the earlier days motors caused a great deal of trouble, but now, thanks to the advance of engineering, engine failures are of rare occurrence; also a stop in the air does not now necessarily mean a precipitate descent.

Of the remainder we have faulty design or wear and tear of the machine, five. The sad case of Cecil Grace lost at sea through the absence of an efficient compass, and of Plochman unaccounted for. (Several leading medical men have suggested that it would be quite possible for the different altitudes to affect the pressure of the blood and so injure the system.)

## Synopsis of Previous Accidents.

Name of Airman.	Nationality.	Where Killed.	Date.	Machine.
Lieut. Selfridge	American	Washington	17.9.08	Wright
M. Lefebvre	French	Juvisy	7.9.09	
Capt. Ferber	French	Boulogne	22.9.09	Voisin type.

He was flying low, and in attempting to turn, one wing tip touched the ground, overturning the machine. Capt. Ferber was pinned to the ground.

Sen. Fernandez Spanish... Nice ... 6.12.09 Own design  
The machine suddenly stopped and dropped to the ground from a considerable height.

M. Delagrangé... French ... Pau ... 4.1.10 Blériot  
At a height of 40 feet his left wing collapsed, due to having fitted an engine of 40-h.p. in place of the usual 18-h.p. Anzani.

M. Le Blon ... French ... S. Sebastian ... 2.4.10 Blériot  
Probably due to the same cause as the above. At height of 150 feet the planes collapsed and he fell into the sea; his death was due to drowning.

M. Michelin ... French ... Lyons ... 13.5.10 Antoinette  
Flying at dusk at a high speed he collided with a mark-post, which, breaking, fell on his head.

Herr Robl ... German ... Stettin ... 18.6.10 H. Farman  
High wind blowing; crowd got dissatisfied at no flying. In descending from a height of about 200 feet was apparently caught in a squall and capsized.

M. Wachter ... French ... Rheims ... 4.7.10 Antoinette  
Wings doubled up, probably due to the rain having warped some vital part.

M. D. Kinet ... Belgian ... Ghent ... 10.7.10 H. Farman  
Fell from a height of 100 metres, supposed to be due to sudden stoppage of motor.

Hon. C. S. Rolls British ... Bournemouth 12.7.10 Wright  
Bringing up too sharp after a *vol plané*.

M. N. Kinet ... Belgian ... Belgium ... 3.8.10 H. Farman  
A stay gave way and the machine was dashed to the ground. Strong wind was blowing.

Lieut. Pasqua ... Italian ... Magliano ... 20.8.10 H. Farman  
Motor stopped and machine was smashed; he was killed instantly.

M. Maasdyk ... Dutch ... Arnheim ... 27.8.10 Antoinette  
Motor stopped and he lost control.

M. Poillot ... French ... Chartres ... 25.9.10 Savary  
Machine was seen to suddenly tilt and fall to the earth; probably due to gust of wind.

M. Chavez ... Peruvian ... Domodossola 27.9.10 Blériot  
Strain after a *vol plané*.

Herr Plochman ... German ... Habsheim ... 28.9.10 Biplane  
Fall from 150 ft. No explanation.

Herr Hass ... German ... Moselle ... 1.10.10 Wright (German)  
Motor stopped at a height of 500 ft.

Capt. Matsievitch Russian ... St. Petersburg 7.10.10 H. Farman  
Turning up at too sharp an angle after a *vol plané*.

Capt. Madiot ... French ... Douai ... 23.10.10 Breguet  
First solo flight. Machine appeared unsteady and suddenly dived to the ground from a height of 100 metres. Probably due to bad steering.

Lieut. Mente ... German ... Magdeburg 25.10.10 Wright  
After a *vol plané* on restarting his engine he seems to have lost control.

M. Blanchard ... French ... Issy-les-M. 26.10.10 Blériot  
Planing down from about 30 metres machine appears to have got out of control.

Lieut. Saglietti ... Italian ... Centocelle ... 27.10.10  
At a height of 50 ft. his machine refused to respond to the elevator, he tried to jump clear but fell, and machine crashed on top of him.

R. Johnstone ... American ... Denver ... 17.11.10 Wright  
Unnecessary *vol plané*.

Eng. Cammarota Italian ... Centocelle ... 3.12.10 Biplane  
Suddenly capsized and fell; may be due to the motor.

S. Castellani ... Italian ... Centocelle ... 3.12.10  
Passenger in the above.

Mr. C. Grace ... British ... Lost at sea 22.12.10 Short-Wright  
Probably due to inefficient compass.

M. Laffont ... French ... Issy-les-M. 28.12.10 Antoinette  
Unable to regain stability, due to a jammed steering wire.

Mario Pola ... Passenger in the above.  
Lieut. Caumont French ... St. Cyr ... 30.12.10 Nieuport

Flying at a high speed, machine did not answer her helm.  
J. B. Moisant ... American ... New Orleans 31.12.10 Blériot

Monoplane dipped its head and dropped from a height of 100 ft. There were several very tricky air currents.

A. Hoxsey ... American ... Los Angeles 31.12.10  
Unusual currents of air. Machine fell from a height of 300 ft. and turned over twice; aviator managed to retain his seat but was apparently killed by motor falling upon him.

Table showing different causes.

Non-mechanical.		Out of 28		Mechanical.	
		Unaccounted for.		Lost at sea.	
		1		1	
		14		12	
Weather.	Faulty steering, feats.				
4	4	6			
Wind.	Rain.				
3	1				
		5		2	
		7		5	
		Stopped.	Too heavy.	Control.	Design.
		5	2	3	2

## Mr. F. K. McClean's "Short" Biplane.

SPEAKING of the Short biplane with which Mr. F. K. McClean was about to make an attempt for the Baron de Forest Prize on the Sunday before Christmas, our special correspondent at the Royal Aero Club flying ground down at Eastchurch then used the words, "It was obvious that the machine was not up to the mark, and the engine not turning up to speed." In this connection we now learn that the trouble was wholly and solely due to a choked radiator owing

to the presence of scale and sediment having found its way into the small tubes, the fault being in no way whatever connected with the builders of the aeroplane—which had flown well previously and has since then carried passengers as well as a large amount of fuel and oil, using only about two-thirds as much power. Messrs. Short Bros. are naturally desirous that no misunderstanding should have arisen which could reflect adversely upon their justly-high reputation as builders of flying machines.

# The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

## Annual Dinner.

THE ANNUAL DINNER will take place at the PRINCE'S RESTAURANT, Piccadilly, London, W., on TUESDAY, JANUARY 31st, 1911, at 7.30 for 8 o'clock.

The following prizes won during the year will be presented:—

The cash prize of £1,000 attached to the Gordon-Bennett Aviation Trophy to C. Grahame-White.

The Baron de Forest £4,000 prize to T. Sopwith.

British Empire Michelin Cup and cash prize £500 to S. F. Cody.

Royal Aero Club Challenge Cup to Hon. Mrs. Assheton-Harbord.

Members have received a special circular dealing with the annual dinner, and in order to facilitate the arrangements they are requested to notify the Secretary as early as possible if it is their intention to be present. Members may be accompanied by ladies.

Tickets (inclusive of wines, cigars, &c.):—

Gentlemen ... £1 7s. 6d. Ladies ... £1 1s. 0d.

The chair will be taken by His Grace the Duke of Argyll, K.T.

## Committee Meeting.

A meeting of the Committee was held on Tuesday, the 24th inst., when there were present:—Mr. R. W. Wallace, K.C., in the chair, Mr. Ernest C. Bucknall, Mr. John Dunville, Prof. A. K. Huntington, Mr. F. K. McClean, Mr. J. T. C. Moore-Brabazon, Mr. C. F. Pollock, Mr. A. M. Singer, Mr. Stanley Spooner, and Harold E. Perrin, Secretary.

**New Members.**—The following new members were elected:—

Capt. C. R. W. Allen.	Ivor Eliot Peyton.
Gabriel A. Borel.	Joseph Ernest Rosen.
Allan H. Guerriere.	Horace Short.
Albert John Moore.	Arthur George Bootle Wilbraham.

**Aviators' Certificates.**—The following aviators' certificates were granted:—

48. H. J. D. Astley.  
49. Robert Macfie.  
50. C. Howard Pixton.  
51. Herbert John Thomas.  
52. E. "Smith."

The request of the Aero Club de France to grant aviators' certificates to Gustav Hamel and John Weston was granted.

**Certificates for Dirigibles.**—Certificates for dirigibles were granted to the following:—

1. Capt. P. W. L. Broke-Smith, R.E.  
2. Lieut. C. M. Waterlow, R.E.

## Competitions Committee.

A meeting of the Competitions Committee was held on Monday, the 23rd inst., when there were present:—Mr. Mervyn O'Gorman, in the chair, Mr. Ernest C. Bucknall, Col. H. C. L. Holden, R.A., F.R.S., Prof. A. K. Huntington, Mr. V. Ker-Seymer, Major F. Lindsay Lloyd, Mr. J. T. C. Moore-Brabazon, and Harold E. Perrin, Secretary.

The draft Rules of the *Daily Mail* £10,000 Prize were again considered.

## Gordon-Bennett Aviation Cup 1911.

On Thursday, the 19th inst., Mr. Ernest C. Bucknall, Prof. A. K. Huntington, Mr. J. T. C. Moore-Brabazon, and the Secretary made an inspection of Hendon Aerodrome together with outlying grounds.

## International Michelin Cup, 1911.

As we recently foreshadowed, it has now been practically decided that the competition for the Michelin Cup this year shall be a cross-country one. Each competitor will choose two points on the map, either 50 or 100 kilometers apart, and he will then have to fly to and fro at a minimum speed of 50 kilometers an hour. He will be allowed to descend as often as necessary, provided the minimum speed mentioned above is maintained. The various parts of the aeroplane will be sealed by officials of the Aero Club.

On Saturday, the 21st inst., Mr. Ernest C. Bucknall, Mr. J. T. C. Moore-Brabazon and the Secretary visited Brooklands. Major F. Lindsay Lloyd showed them the ground available for a flying course of 5 miles.

## Aviation Lectures.

Mr. Archibald R. Low, M.A., will deliver a course of eight lectures at the University College, Gower Street, London, W.C., dealing with "The Design and Calculation of Aeroplanes," commencing on Friday, February 3rd, 1911. Members wishing to attend can obtain tickets from the Secretary, Royal Aero Club.

## Gordon-Bennett Aviation Cup.

The Cup, having been won last year by Mr. C. Grahame-White, the nominee of the Royal-Aero Club, the race for 1911 will be held in England. The exact date and place will be announced later.

Each Club forming part of the Fédération Aéronautique Internationale has the right of challenging the holder, the Royal Aero Club, and such challenge must be received before March 1st, 1911.

The Committee of the Royal Aero Club will select the three competitors and reserves representing the United Kingdom. Intending competitors are requested to notify the Secretary on or before February 28th, 1911, of their willingness to compete if chosen. Applications must be accompanied by a cheque for £20, the entry fee, which amount will be returned should the competitor not be selected.

Candidates must be members of the Royal Aero Club.

## Gordon-Bennett Balloon Contest.

The Cup having been won last year by the Aero Club of America, the race this year will be held in America. The exact date and place will be announced later.

Each Club forming part of the Federation has the right of challenging the holder, the Aero Club of America, and such challenge must be sent in not later than March 1st.

The Committee of the Royal Aero Club will select the competitors to represent the United Kingdom, and intending competitors are requested to notify the Secretary on or before February 20th, 1911, of their willingness to compete if chosen. Applications must be accompanied by a cheque for £20, the entry fee, which amount will be returned should the entry not be accepted.

## International Aero Exhibition at Olympia.

The International Aero Exhibition held by the Society of Motor Manufacturers and Traders under the auspices of the Royal Aero Club, will take place at Olympia, opening on Friday, March 10th, 1911, and terminating Saturday, the 18th.

Full particulars can be obtained on application to the Exhibition Manager, Society of Motor Manufacturers and Traders, Maxwell House, Arundel Street, Strand, London, W.C., or the Secretary, Royal Aero Club, 166, Piccadilly, London, W.

In connection with the Exhibition it is proposed to organise an exhibit of model flying machines. Space will be given free, and the Royal Aero Club will erect suitable stands and provide the necessary attendants. In order to partly cover this expense a charge of 10s. will be made for each model exhibited. It is proposed to award Medals and Cash Prizes.

## Library.

Mr. Fred T. Jane has kindly presented to the club a copy of his book "All the World's Airships (Aeroplanes and Dirigibles)."

HAROLD E. PERRIN.

166, Piccadilly.

Secretary.

## Flying Meetings in India.

EVIDENTLY they manage things better in India than they are able to in Europe, as we notice an advertisement regarding the first flying meeting at Calcutta distinctly states that "everyone inside the grounds will have a perfect view, but outsiders will not witness anything." Our readers among the gentler sex will be interested to note that ladies were admitted at half price. Passenger flights could be arranged for on payment of 100 rupees. The admission charges were 10 rupees and 3 rupees.



## BRITISH NOTES OF THE WEEK.

### Olympia Flight and Motor Boat Show.

IN view of the fact that it has been decided to abandon the proposed Exhibition of Commercial Vehicles at Olympia, arrangements are being made to hold the Flight and Motor Boat Show a little later in March. It was originally decided that the Exhibition should open on the 10th.

### Statue of Liberty Prize.

FROM latest cablegrams to hand, it would appear that the Aero Club of America are inclined to modify the attitude at first attributed to them of flouting the decision of the F.A.I. in regard to the reconsideration of the allocation of the Statue of Liberty Prize, as they are now, it is stated, either ready to award this event to Mr. Claude Grahame-White, or at least they are willing to reconsider the matter when the full text of the F.A.I. decision has arrived officially with them. We congratulate them upon such a result as we could see nothing but trouble ahead under any other conditions.

### The Scottish Flight.

ACCORDING to the *Edinburgh Evening News* at Causewayhead, Stirling, on the 14th inst. Mr. Barnwell made the longest flight chronicled of any Scottish-built aeroplane with a Scottish pilot up.

### Flying in Wales.

SOME work with a Blériot monoplane has recently been in progress at Oxwich Sands, Gower, about eleven miles from Swansea, by Mr. Ernest Sutton, of Messrs. Sutton Brothers, of Swansea. Several experimental flights were accomplished by Mr. Sutton during last week, but these culminated in an unpleasant experience on Monday last. Whilst practising on the sand, after having made three flights, attaining an altitude of about 50 ft., the machine during the last of these suddenly came down with a crash. Considerable

damage was done to the propeller and framework, but fortunately Mr. Sutton escaped without injury. As this was only the second serious attempt by the aviator at flying he is to be heartily congratulated upon the success so speedily attained and the pluck which enabled him to go so rapidly ahead.

### Memorial to the Late Hon. C. S. Rolls.

A TOUCHING tribute to the memory of the late Hon. C. S. Rolls has been paid by the workmen at the Rolls-Royce factory at Derby. On Friday of last week Mr. Claude Johnson was asked to unveil a splendid tablet which has been placed in the Institute connected with the works. Previous to unveiling the memorial, Mr. Johnson conveyed to the staff and employees the directors' high appreciation of the good feeling and kindness which prompted the proposal to erect the memorial. He spoke of the valuable services rendered by Mr. Rolls, who, he said, always had the keenest admiration for the skill and enthusiasm of the R.R. staff. Having the privilege of the friendship of Lord and Lady Llangattock, he was in a position to state that although nothing could cure the pain which the parents suffered at the loss of so brilliant and charming a son, yet that pain would be considerably alleviated by expressions of regard and affection such as were shown in the memorial. From the photograph which we give it will be seen that the memorial consists of a hammered bronze plate mounted on a polished black slab. The lower portion is in the form of a scroll, bearing upon it in enamel various achievements of the late Hon. C. S. Rolls as motorist and aeronaut. The upper portion contains a finely enamelled miniature, while on either side are panels depicting incidents in Mr. Rolls' career. Among those present at the ceremony were Mr. E. A. Claremont (Chairman of the Company), Mr. F. H. Royce, Lord Herbert Scott, Mr. A. H. Briggs, Mr. P. W. Northey, Mr. J. de Locze, and about 850 members of the staff.



The Memorial to the late Hon. C. S. Rolls, erected by the employees of Rolls-Royce, Ltd., at the Company's works from subscriptions by the staff and workmen. This work of art was formally unveiled on Friday, January 20th, by Mr. Claude Johnson, Managing Director, in the presence of 850 of the staff and employees.

## J. de Lesseps a Benedict.

ON Wednesday the hero of the second cross-Channel flight—M. J. de Lesseps—was married to Miss Grace Mackenzie, at St. James' Church, Spanish Place. It will be remembered that the aviator met his bride during his visit to Canada last year.

## Is This a Model Club Record?

MR. S. E. LUKYN writes us as follows:—

"The following may be of some inducement for other small villages to start a model aero club.

"The Sunbury Model Aero Club (Thames Street) had been in existence one week when the first flying meeting was held.

"Fourteen models were present, all of which made flights of 200 yards, including one made by the club's instructor, Mr. P. Clark, to his own design. This model, a 4 oz. one, flew for 60 secs. timed by a stop-watch, and attained an altitude estimated at over 200 ft., and in another flight was found to cover a distance of over 440 yards.

"Can any other club boast of such a performance at its first meeting?"

## The "Boy's Book of Airships."

BOYS are notoriously up-to-date in their ideas. Many of the books most popular with them are, in fact, those which are to a certain extent anticipatory, and so it is hardly surprising that the "Boy's Book of Airships," by Mr. Harry Delacombe, has found an appreciative audience both on this and on the other side of the Atlantic. It will be noted with interest by schoolboys that a copy of the book has just been accepted by H.R.H. the Prince of Wales, who has, we understand, expressed the great pleasure which its perusal has afforded him. In America the book has already run to four editions, while in the new edition just published in this country additional matter has been added by Mr. E. J. Partridge. The book runs to well over 300 pages, is splendidly printed, and has a very large number of full-page photographic illustrations, as well as several little sketches among the text. The book is divided into three parts, the first dealing with balloons, the second with airships, and the third with aeroplanes, kites and gliders. Besides telling the history of each branch of aeronautics, Mr. Harry Delacombe sets out in simple and interesting

language the principles involved, while he also describes the construction of various machines with which success has been achieved. In the section on aeroplanes, for instance, after giving the history of the early experiments, the author goes on to deal with the principles of gliding and then to discuss the question of the best form of plane, the effects of curved surfaces, &c., then dealing with various machines such as the Wright, Voisin, Farman, Blériot and many others, concluding by a résumé of the more important recent events. The subject of dirigibles is also treated in a similar way, so that schoolboys and others who are fortunate enough to secure a copy of this book should after reading it have acquired a good general knowledge on the subject of aeronautics and be able to take a practical part in the construction and flying of model machines of various sorts.—(Grant Richards. Price 6s.)

## The Late Mr. Stringfellow.

IN referring to the much regretted death of Mr. Stringfellow in our last issue, the initials A. H. should have been used instead of F. J. Mr. F. J. Stringfellow, likewise a son of the famous John Stringfellow, predeceased his brother.

## "Book Here for Flying."

QUITE a business is growing up in passenger flights now that the conveniences are so great within easy distance of London. Both at Brooklands and the London Aerodrome near Hendon, numbers of passengers are daily experiencing the delights, although only passively, of aviation as passengers, there generally being one or other of the aviators, weather permitting, on the grounds ready to carry out these initiations. It has remained for Messrs. Keith Prowse and Co., the well-known box office proprietors, to establish direct communication and booking between Brooklands and their establishment, so that anyone can now ascertain at once at any of the firm's 38 branches, whether flying is possible at the time of enquiry; whether there is an open ten minutes or so during the day. In connection with this innovation, on Saturday last Mr. Keith Jones, Managing Director of Messrs. Keith Prowse and Co., Ltd., and Mr. Phillips were at Brooklands arranging for a direct private line to the aviation ground.

As a further convenience cars will meet intending passengers at Brooklands to convey them across to the flying grounds by notifying Messrs. Keith Prowse.

## PROGRESS OF FLIGHT ABOUT THE COUNTRY.

NOTE.—Addresses, temporary or permanent, follow in each case the names of the clubs, where communications of our readers can be addressed direct to the Secretary. We would ask Club Secretaries in future to see that the notes regarding their Clubs reach the Editor of FLIGHT, 44, St. Martin's Lane, London, W.C., by first post Tuesday at latest.

### Aero Model Making Club.

THE secretary notifies us that the address of the club's new workshop, where they have secured two big rooms in which they are fitting up benches, &c., is at 40, Kennington Park Road, S.E. Catalogues from manufacturers will be welcomed by the secretary for the use of the members of the club.

### Aeronautical Soc. of Great Britain (53, VICTORIA ST., S.W.).

IN addition to the lecture, "From Kites to Aeroplanes," by Mr. S. F. Cody, on February 9th, and Mr. F. Handley Page's lecture on February 14th, a paper is to be read, at a date to be fixed later, on "Automatic Stability," by Lieut. J. W. Dunne.

### East London Aero Club (ALEXANDRA HOTEL, STRATFORD, E.).

SOME very pleasant evenings have been spent during the month in the clubroom. Several papers have been read, after which discussions followed, and together with the models and gliders that have been exhibited the members are rapidly acquiring a technical knowledge of aeronautics.

A library has been opened and a large number of books have been distributed amongst the members. Mr. E. H. Lancaster has been appointed librarian.

The Workshop Committee has been very busy of late visiting several likely workshops, and the results of their labours will be

announced at the next meeting. Some interesting information will also be given out relating to the February flying meetings, and the technical lectures to be delivered during February and March.

### Yorkshire Aero Club (HOTEL METROPOLE, LEEDS).

MR. STUART A. HIRST, the newly appointed chairman of the club, presided at a meeting at the Hotel Metropole, Leeds, last week. He congratulated the model section of the club on their very successful work during the last few months at the Rifle Barracks, and he had every hope that during the coming summer it would be possible for the club to secure a full-sized glider for experimental purposes. Further, he thought that before the summer was over, facilities for practical experiments with this glider would be possible, as negotiations were already well in hand for a flying ground.

Mr. A. Hunter, of Dewsbury, a member of the club, during the evening gave some very instructive and entertaining particulars of his lessons and experiences in acquiring the art of aviation at Juvisy. He learnt very rapidly on the school machine, managing to turn round and come back in his second lesson, a short flight being accomplished in his third lesson, followed by three short flights during his fourth. Some very valuable hints were also given by Mr. Hunter on the managing of aeroplanes, and he particularly emphasised by way of conclusion the value of learning to glide before trying to fly. By this means aviators were able to come gently to the ground at the end of a flight.

### A German Review of Aviation.

AN instructive book has recently been published by Mr. J. F. Lehmann, of Munich, under the title of "Jahrbuch der Luftschiffahrt" (Year-Book of Flying). It has been compiled by Herr Ansbert Vorreiter, and forms, as it purports to be, a very complete record of flying during 1910. Both airships and aeroplanes are carefully dealt with and besides a large number of photographs the book is illustrated by scale drawings of the various dirigibles and

flying machines, while many admirably arranged tables permit of the dimensions, &c., of various machines being compared. In addition to particulars of the actual machines the book also has sections dealing with sheds for dirigibles, flying grounds, artillery for use against both aeroplanes and airships, and also a chapter on the military uses of flying machines. Another section gives a summary of the patents taken out in Germany during the past year, while at the end of the book is a summarised record of the principal events and performances made during the past twelve months.

## HONOURING MR. GRAHAME-WHITE.

ALTHOUGH rather late in the day, on Friday of last week a presentation was made to Mr. Claude Grahame-White by the A.A. and M.U. Aviation Section in commemoration of Mr. Grahame-White's splendid efforts in April of last year to secure for a Britisher the £10,000 *Daily Mail* prize, for the London to Manchester flight. Mr. Joynson-Hicks occupied the chair and was supported by some forty or fifty guests.

The loyal toasts having been disposed of, Major J. N. C. Kennedy, in proposing "Success to British Aviators," said that one of the difficulties encountered in connection with the aviation movement in Great Britain was the obtaining of a flying ground, by reason of the demands of landlords, who wanted from £10 to £20 an acre. Although the Aviation Section of the Association had been in touch with about 100 different grounds, up to the present they had not succeeded in getting one, although there were certainly plenty available.

He saw no future for dirigibles as against aeroplanes and he maintained that a proposition which he made a year ago, that aviation would lead to the cessation of all war, still held good. In regard to flying meetings, he thought these would continue to be popular quite as long as horse-race meetings.

Major Baden-Powell, in response, regretted that he was unable to call himself a practical aviator, one of the main reasons being, as with so many others, that he was not wealthy enough to be an aviator at present, but he thought that the time would come when aeroplanes would be quite general. It was, he said, very loudly acclaimed by the Press and the opinion held amongst the British public that flying was a very dangerous game and that people should therefore be discouraged therefrom. This was entirely wrong, rather should aviators be encouraged to ignore such dangers as were said to exist. He, of course, strongly advocated caution, but he considered with proper judgment and discretion it was far less dangerous than many other sports, instancing particularly Alpine climbing.

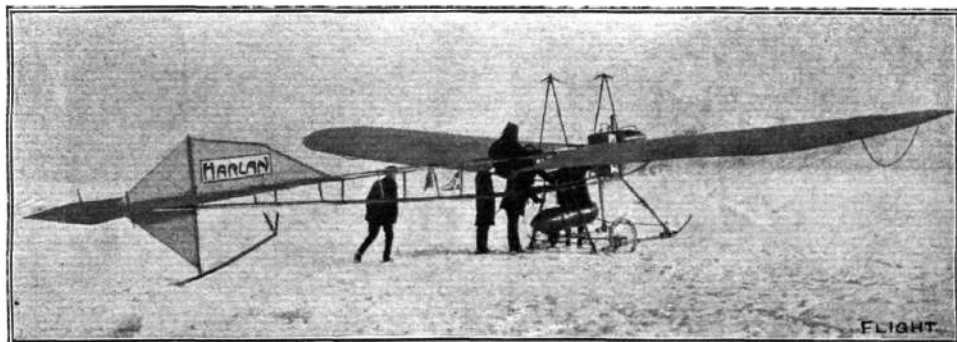
The chairman, in submitting the toast of the afternoon, "Mr. Claude Grahame-White," said that in asking their guest to accept the trophy they would not only be honouring him but were honouring themselves. Britishers were proud of their aviators and in Mr. Grahame-White they had the supreme representation of something essentially British in pluck and resource. He was not a believer in discouraging aviators because of the exaggerated talk of dangers. The advance in the past year in the science was, he thought everybody would agree, greater in such a period than in any other industry the world had ever known. He could not agree in regard to dirigibles being inferior to aeroplanes. Neither did he think aeroplanes would stop war. Such a result was not in accordance with the teaching of past history in other directions. He was emphatic in maintaining that the time had arrived when both the Naval and Military Authorities should take up the matter seriously and without delay form a really efficient Aeronautical Reserve. The last few months, thanks to the splendid achievement of Mr. Grahame-White, had been one succession of triumphs

in carrying the British flag to the front throughout the world in aviation.

Mr. Joynson-Hicks then presented the silver statuette representing the Goddess of Fame holding a replica of the Farman biplane used by the aviator on the memorable London to Lichfield flight.

Mr. Grahame-White, in acknowledging the presentation in a sympathetic speech, said that it was due to the difficulties he had had to contend with during this attempt that had chiefly urged him on to further work which had resulted so successfully for himself and British prestige, although he must thank luck a good deal for some of the success which he had attained. Although last year's Gordon-Bennett race was won on a foreign machine every effort he hoped would be made this year to secure it with a British machine. The one thing which was needed was the provision of capital to give manufacturers in the home industry the chance to make such machines, of which he was satisfied there were many fully capable in Great Britain. They had the aviators, it was merely encouragement they wanted, the same as the practical men in other leading countries of the world were receiving. They would then without doubt soon place this country at the head of the aeronautical movement. In regard to the Aeronautical Reserve, he had already placed before the Government a scheme for their consideration, details of which, however, were necessarily at present of a confidential nature, but he was prepared to place himself and the whole of his organisation, including his aeroplanes, at the disposal of the War Office and Admiralty in whatever capacity they were prepared to make use of them. Speaking of the remarkable feat of Mr. Ely in America, he was also open to give a demonstration of flying off and on to a battleship as he had offered to do last year. In regard to the dangers and accidents, he thought that aeroplanes of approved type were a very safe means of locomotion. He thought many aviators tempted Providence to its utmost limit to achieve acrobatic feats which their machines were never intended to accomplish and which had been rightly deprecated to the utmost extent. A year or two hence, when machines had been designed to withstand strains at present not understood, possibly some of the present trick performances might be more justified. At present they were no help to the science of aviation. In regard to aviation meetings from a spectacular point of view these were already practically extinct. He looked to competitions of a different character to take their place in the future. He spoke in very high terms of the way in which the art of flight had been encouraged by newspaper enterprise, particularly instancing the magnificent work of the *Daily Mail*, with their past £10,000 prize and their present munificent rewards which were still to be gained. The *Daily Graphic* had helped forward in like manner with spherical ballooning and the *Morning Post* had provided the nation with a dirigible balloon upon the latest war scale, subject to its proving its suitability by undergoing official trials.

The proceedings closed with a vote of thanks to the chairman upon the proposition of Mr. Chas. Jarrott.



The Hærlan monoplane at the Johannisthal Aerodrome with Grulich in the pilot's seat, who, on this machine on January 8th, flew for 2h. 11m. 15s.

## FROM THE BRITISH FLYING GROUNDS.

### Royal Aero Club Flying Ground, Eastchurch.

So far as any actual flying is concerned the past week has been practically a blank one, the only exception being on Sunday, when Mr. McClean was out and took up his sister for a cross-country flight over Harty Road Station, Capel Hill, &c. Subsequently he also made a second trip over the marshes, being accompanied by Mr. Morris Bidder.

### Brooklands Aerodrome.

ALTHOUGH, in comparison with the previous week, there is not a great deal to report in connection with Brooklands Flying Ground, each of the last few days has seen a good deal of practice and experimenting on the part of the occupants of the sheds there. It is noteworthy that several of the flyers have been trying one another's machines, and Mr. O. C. Morison, who has hitherto confined his attentions to monoplanes, was given a trip with Lieut. Watkins on the Howard Wright biplane on Wednesday week. On Sunday he was also out on the Macfie biplane belonging to Mr. Valentine, although this essay ended in an over-sudden landing, fortunately without any serious results to the aviator. As we mentioned elsewhere Mr. Maurice Ducrocq is making a speciality of passenger flying, and on Friday of last week made a couple of splendid trips with two passengers besides himself on board. The first time the live weight carried was 31 stone 4 lbs., while in the second the live weight was 32 stone 12 lbs., and when it is remembered that the machine is one built for racing it will be recognised that these performances were very good. During the morning of the same day Mr. Pixton, who has just obtained his pilot's certificate, was out on the Roe triplane and ventured outside the limits of the aerodrome in the direction of Byfleet. A second trip was brought to a conclusion by the engine giving trouble, and in the sudden landing the chassis was somewhat crumpled up. Several tests were also made by Lieut. Watkins with Mr. Billings' biplane, which, originally a Voisin, has now been rebuilt and more closely resembles the Farman type. Later Mr. Billings himself was at the wheel, and made one or two straight-line flights. On Saturday morning, under the guidance of Mr. Astley, a new aviator, who flies under the *nom de guerre* of "E. Smith," made the necessary flights to obtain his pilot's certificate, which has since been granted by the Royal Aero Club. In the afternoon both Lieut. Watkins and Mr. Ducrocq made several flights with passengers, among whom were a number of ladies.

### Laffan's Plain.

ON Thursday of last week Mr. de Havilland had his biplane out, and was flying for two hours around Laffan's Plain. Although a stiffish northerly breeze was blowing, it was noticeable that the machine was flying much more steadily than on his previous trip. On Monday Mr. Cody was out, and made several trips with passengers, including Major Sir Alexander Bannerman and Lieut. Cammell. In one of these trips he chased after the "Beta," and succeeded in getting past her.

### London Aerodrome.

Grahame-White School.—Those fortunate enough to be at Hendon on Sunday week witnessed quite an unexpected exhibition. A visit was paid to the Grahame-White school and works by Mr. Hamel, who, using one of the school 50-h.p. Gnome-Blériots, gave in the course of two excellent flights a splendid demonstration

of his skill. Mr. Hamel is evidently a specialist in high flying, as during his second flight he attained an altitude of well over 1,500 ft., coming to earth *en vol plané* at a very fine angle.

No flying was indulged in on the three following days. The works, however, were fully occupied, their attention being centred on the assembling of the new Grahame-White biplane and the all-British E.N.V.-engined Farman. The Anzani-Blériot was also thoroughly overhauled and tuned up.

On Thursday, Greswell brought out the ancient "Blue Bird," and at his first attempt made an extremely satisfactory straight flight across the full length of the ground, maintaining an average height of about 30 ft. He continued practising throughout the afternoon, and retired to the hangar at dusk with a flight of three circuits to his credit. This with an engine that was only pulling on an average 160 lbs.



"Valkyrie," with a pupil in charge, at the London Aerodrome.

On the following day he was also out practising on the "Blue Bird," and giving instruction to Martin, who showed his ability to roll in straight lines, a difficult thing for a beginner on a monoplane.

The all-British E.N.V. engined Farman "took the air" on Saturday for the first time since its appearance at Dover, when the tent fell on it, and when a relic-hunting crowd succeeded in making off with one aileron, the whole of the trailing edge, and of nearly all the "tendeurs." Nice amiable idiots the average gaping crowd.

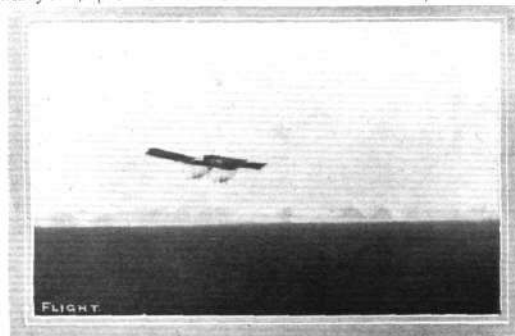
Mr. Grahame-White flew it round the aerodrome for three or four circuits, then descending, as he found the engine was not pulling as well as it might.

Greswell was also out flying on the school Anzani-Blériot.

Valkyrie School.—Thursday and Friday of last week were good flying days, and the pupils took full advantage of it. On Thursday Mr. Eadsforth, a new pupil, took his first lesson, and from the way he managed the machine it appears that he will make a very good pilot. On the following day Lieut. Dimmock executed altogether some fifteen circuits of the aerodrome in excellent style. Unfortunately in the end he met with a slight mishap, and made rather an abrupt acquaintance with the boundary fence of the aerodrome. The damage done, however, was only slight, and Lieut. Dimmock hopes to get his pilot's certificate at the first available opportunity. The big passenger-carrying machine was out and several demonstrations were made. Saturday was rather too windy for the pupils, but the school pilot took out the No. 2 machine and made some good circular flights. The feature of the day's work on Monday was the trial trip of the new No. 4, which rose from the ground at the first attempt and made a good circular flight. Tuesday was again too windy for pupils but several trials were made with No. 4.



FLYING WORK AT THE LONDON AERODROME.—The "Valkyrie" three-seater ready to start with a full freight—and in flight.







**PASSENGER CARRYING AT BROOKLANDS AERODROME.**—Mr. Ducrocq, who is now, with his Henry Farman, one of the most energetic passenger-carrying pilots at Brooklands, in the pilot's seat before a start with Mrs. Keith Jones as passenger. Standing in front are, from left to right, Mrs. G. Phillips, Mr. Keith Jones, Mrs. Palmer, a Ducrocq pupil, and Mr. G. Phillips, both these gentlemen being associated as Directors of Messrs. Keith Prowse and Co. with the box office just opened by that firm on the grounds and in direct communication with London for the booking of seats for flights, long and short.

#### Salisbury Plain.

FLYING continues actively in this district. M. Tetard on Wednesday last week was out on the Bristol machine taking a trip round Nitin Downs. In the afternoon he was up again, this time carrying Mr. H. J. Thomas as a passenger, flying at an altitude of about 850 ft. and making some fine *vol-planés* to earth. Lieut. Connor, R.F.A., using a Farman biplane, was executing some excellent straight flights of about 1½ miles each. Taking his turn also in the afternoon, Mr. Thomas on the Bristol biplane was flying steadily for some time. On Thursday Tetard was carrying passengers, including Mr. Thomas and Mr. Moran. On the next day the E.N.V.-engined Bristol biplane was at work in the hands of Tetard, whilst Mr. Thomas, who was flying with considerable

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#### Five Passengers Carried by Henry Farman.

PRACTICALLY always leading the way in all original achievements, Mr. Henry Farman on Wednesday of last week once more carried out an extremely novel performance. Although it was extremely cold at Bouy, Mr. Farman, whilst testing one of his new machines, carried five passengers with him, two of whom took up positions on the skids. The total useful load carried under these conditions was 420 kilograms.

#### Advancing the Passenger Carrying Record.

PROGRESS continues in practical work accomplished by aeroplanes. On the 19th inst., at Douai, Breguet on a military type Breguet aeroplane (R.E.P. motor), which has been acquired by the Russian Government, beat the world's record for passenger carrying by covering 50 kiloms. in 34 mins. 54½ secs. and 100 kiloms. in 1h. 9m. 28½s., giving an average of 86·368 k.p.h.

#### Weymann Still Cross-Country Flying.

DETERMINED to have *déjeuner* at Rheims on Sunday last, Mr. Weymann, by way of improving upon his former performance,

skill, carried out the tests qualifying him for obtaining his certificate. During the day one of the Bristol biplanes, fitted with a Gnome engine, was despatched to Singapore, from whence it is hoped active work will soon be heard of. Tetard was flying again on Saturday on the Bristol machine, carrying passengers as before, and on Sunday he made an excursion on the Bristol, flying round Amesbury, Durrington, and Nitin Downs at a height of fully 1,000 ft. On Monday one of the Bristol machines was out, this time in the hands of Vusepuy, the Demoiselle pilot. Not being so well versed in this machine as the Demoiselle, when he came to earth, in landing he sustained a slight mishap, breaking some struts, the skids, and propellers. Fortunately repairs were speedily effected, and Tetard then taking charge of the machine flew back to the sheds.

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invited three passengers to accompany him upon the flight from Bouy, no doubt just by way of having company *en route*. His companions were MM. Neri, Boutmy and Van Gaver. Starting from Bouy at 11.45, on his military type Henry Farman, he reached Betheny at 12 noon, where he and his companions promptly indulged in their meal at the Lion d'Or. The return journey was made at 3 o'clock, and within 25 minutes, having flown at a height of 150 metres, the Bouy flying ground was regained, although a descent was not then actually made. Continuing the flight they remained circling the Camp for a period of another 25 minutes before descending to their hangars.

#### Herr Grade has a Chilly Experience.

TAKING advantage of the calm weather, Herr Grade on Monday attempted to fly on his monoplane from his headquarters at Bork, near Berlin, to Magdeburg. When, however, he reached Belzig, about 30 miles from Berlin, he experienced trouble with the motor and decided to land, accomplishing this manoeuvre by slowly planing down from a height of 2,000 ft. An investigation showed that the oil had frozen in the pipes owing to the extreme cold.



# FOREIGN AVIATION NEWS.

## A Monument for Aviation Victims.

THE French Government have commissioned M. Roger Bloche to prepare a monument to the memory of those who have lost their lives in connection with flight.

## Proposed Paris to Berlin Flight.

A SCHEME is being mooted, through the joint co-operation of a Paris and a Berlin newspaper, for a big prize for a flight during the summer from Paris to Berlin. Considerable opposition, however, is anticipated from the German military authorities, having regard to the stringent rules which they have instituted in regard to flying over forts. In all probability such representations will be made that there is little chance of this competition being carried out.

## Military Flyers at Bouy.

IN addition to the flying records which have been made from the Farman School at Bouy, active work has been in progress, particularly with the military aviators. Fisher has been showing some fine altitude work by ascending in one of the military type machines to 300 metres with a passenger in 3 mins. 45 secs., and without passenger in 2 mins. 36 secs., the first 100 metres being taken at over 10°. Adjutant Menard has also carried out some good ascents, rising at different times to 1,200 and 1,400 metres, then planing to earth with the motor completely stopped. In between times Henry Farman has been making many tests with a new machine with two passengers.

## Surveying from Above.

DURING the middle of last week Captain Jouannet, as delegate of the Aero Club du Centre, made ascents at the Henry Farman de la Beauce School under the pilotage of Mahieu, for the purpose of taking observations and studying the contour of the Orleans to Paris road. Ascending to a considerable height, Capt. Jouannet was enabled to make some valuable notes.

## More Successful Work by the Zodiac.

LABOUCHERE, who is a fine pilot of this particular make of flyer, on the 17th inst. was in the air for 40 minutes at Issy. The next day, at a height of 60 metres, he made about a dozen circuits of the aerodrome, finishing with a good *vol plané*, whilst on the 20th another 40 minutes' work, this time at a height of 100 metres, went to his credit.

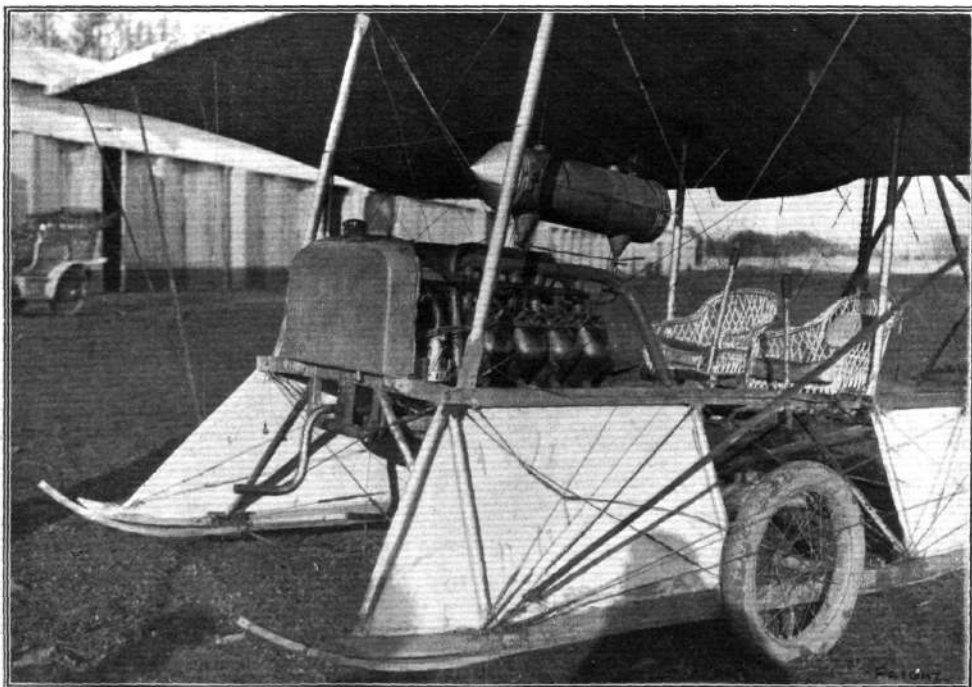
## French Army Pilots and Their Progress.

AT Issy, on Tuesday of last week, Colliex, on one of the new Voisins, was giving some exhibition flights before some of the representatives of the Army. On Saturday last a visit was paid to the Goupy School, at Juvisy Aerodrome, by General Roques, Colonel Bouttiaux and Captain Do for the purpose of inspecting the Goupy machines which are to be acquired by the Army. Ladougue carried Colonel Bouttiaux for a flight whilst the others were inspecting the grounds and hangars. A number of other aviators at the aerodrome took the opportunity of showing their skill by making some excellent flights before the military commissioners, considerable encouragement being given them by the appreciation of the representatives of the Army.

On Sunday Laurens, at Buc, carried Colonel Bouttiaux on his R.E.P. monoplane for a distance of about 20 kiloms.

## Work at Juvisy.

AMONGST the many pilots who are putting in successful work at this centre of aviation are Campell, who, on his Farman, in one day last week, carried ten passengers for various periods. Ladougue and Vedrine on the Goupy machine were up for about an hour altogether, making some tests and flying at about 500 metres high. On Thursday morning the pair made six tours of the drome at 300 metres, and in the evening Vedrine, restarting, covered 185 kilometres in 2 hrs. 34 mins. On Sunday Vedrine on the Goupy, getting away at 11.30 a.m., flew to Etampes, in spite of an unpleasant fog hanging about at the time. He arrived there in 22 minutes, at 11.52, and, restarting at 12.40, was back at Juvisy in 19 minutes, giving a speed of about 90 kilometres per hour.



Latest Pischhoff machine, showing the carriage, E.N.V. engine, and two-seated control arrangement.

**Flying at Nice.**

LAST week the Marquis de Villeneuve-Trans, on a Blériot, made a trip from La Brague Aerodrome as far as Nice, circling round the Palace and the jetty, then coming to rest at the Aerodrome de la Californie, where he was cordially received by the occupants of the hangars.

**At Pau.**

M. BLÉRIOT is very active trying different machines as they become available, time after time executing several circuits at the flying school with various types, whilst Lemartin, pilot-in-chief of the school, is making progress with the four-seated model. On Wednesday Morin made a special flight round the district of Pau carrying out altogether three good flights of an hour's duration. He was again speeding over the town on Friday, this time carrying Lieut. de Malherbe, being up altogether for about two hours, whilst several other flyers at the Blériot School followed in the same direction. On Saturday Morin indulged in some altitude essays, in one flight getting up to about 1,000 metres. At the Compagnie Aérienne Aerodrome Aubrun continues his work with the Morane, on Wednesday flying for about an hour and a half, and the following day for a further half-hour. He hopes presently to attempt some record breaking with this machine.

**Summer Pilots Mounting Up.**

SPECIAL followers of the Sommer type of machine are spreading considerably, and the work is largely due to Visseaux, the chief pilot of this school. Last week the two Lieutenants, Bergognie and Reimbert, passed their qualifications for pilot certificates, this making seven full certificates obtained under Visseaux in six weeks.

**Rheims to Bouy and Back.**

VIDART, the principal teacher of the Deperdussin School, who received Weymann for *déjeuner* last week upon the occasion of his flight from Mourmelon with two passengers, took occasion, soon after Weymann's departure on his return journey, to follow him on his Deperdussin machine. After making a detour of 8 kiloms. he made his descent at Bouy, and subsequently returned to Rheims the same day, the home journey occupying 21 minutes. On the next day he was out across country, flying over the adjoining district, remaining up for considerably over 2 hours before planing gracefully back to his hangar.

**A New School at Tours.**

A NEW aviation school has been opened at Tours by Messrs. Rolland and Pilain, who have secured the Farman biplane with which Paulhan accomplished his historical London-Manchester flight. This machine is now engined with a Rolland-Pilain, and Dufour has been appointed as the leading pilot. At the formal inauguration of the aerodrome, which is only a few kilometres from Tours, Dufour carried out some good exhibition flights, lasting from 5 to over 30 minutes each.

**At the Hanriot School.**

ON the 23rd inst. Lieut. de Grailly, at his fifth lesson, flew for 30 kiloms. over the country, passing over Betheny and Vitry. Hanriot *père* was also flying, and in the course of one of his long trips made use of the clock tower at Betheny as a mark post.

**Tabuteau to try for Duration Record.**

ALTHOUGH he secured the Michelin Cup, Tabuteau will not be satisfied until the duration record once more stands to his name also. At the first opportunity he intends to have a try for this at Buc, and then he will probably make arrangements to visit the various important meetings to be held during the year and endeavour to carry off some of the bigger prizes.

**A Swiss Prize for Hydro Aeroplanes.**

A PRIZE of £400, known to be the Eynard Prize, has been offered in Switzerland for the first Swiss built aeroplane piloted by a Swiss aviator, which shall fly from one end of Lake Geneva to the other between certain points. Three stops must be made on the journey, but each time the aeroplane in restarting must rise from the water within a distance of 1,000 metres from the stopping point, and none of the stops must be of more than half an hour's duration. In this connection it is interesting to note that the Dufaix Brothers are experimenting on the lake with an aeroplane adapted to rise from the surface of the water. A prize will be awarded at the end of the year to the aviator who makes the best time over the course under these conditions.

**The French Military Aviators.**

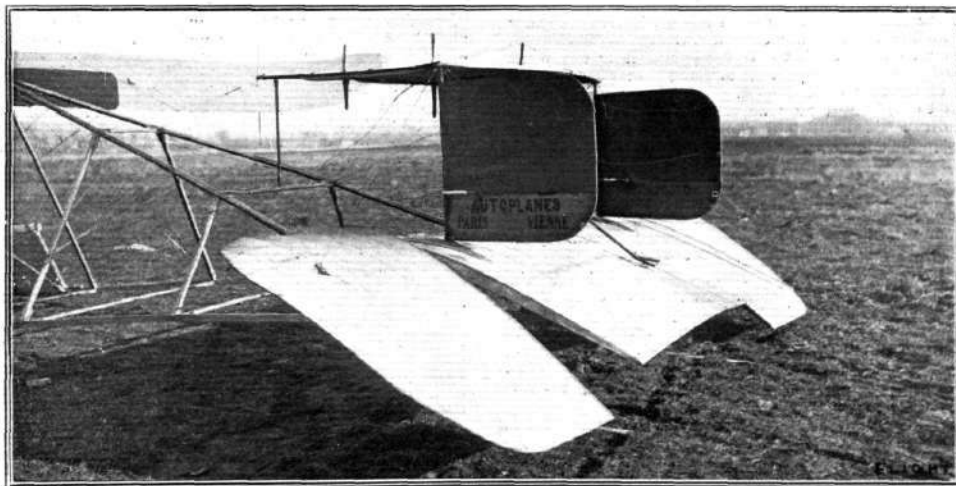
REALISING that the tests imposed by the Aero Club of France upon applicants for pilot-aviator's certificates are not very severe, General Roques, the head of the French Military Aviation Department, has drawn up a list of four tests, which will be required of those officers seeking to qualify for aviation duties. They are:—

1. A flight of more than 100 kiloms. across country.
2. A flight of more than 2 hours' duration.
3. A flight at a height exceeding 300 metres.
4. A flight in a wind blowing at a rate exceeding 10 metres per second.

At the present time 14 military and two naval officers have fulfilled these conditions. They are as follows:—Captains Bellenger, Sido, Marconnet, and Marie; Lieutenants Cammerman, Fequant, Remy, Aquaviva, Crosnier, Chevreau, Maillols, Mailfort, and Letheux; the Adjutant Menard and Naval Lieutenants Blasson and Delage.

**Accident to Italian Aviator.**

DURING the holding of an aviation meeting at the San Rossore Aerodrome, near Pisa, an accident occurred which fortunately resulted in but slight injury to those concerned. Cobianchi, the Italian pilot, was carrying General Dechanrand, the Commanding Officer of the Pisa Brigade, as passenger, and was some 300 ft. up, flying in the direction of the city; for some reason a sudden dive



Tail of the latest Pischoff machine.

was made by the machine, but although the aeroplane was badly broken up the General only sustained slight injuries to his face, whilst Cobiainchi escaped with the fracture of one leg only. Proceedings for the day, however, were immediately stopped.

## Prince d'Udine Flies.

AT Padua, at the Bovolenta Aerodrome, Leonine da Zara, the chief military school pilot, has had the honour of carrying Prince d'Udine for his initiation into flying. Da Zara also executed several flights at 200 metres high with Colonel Vanzo. This aviator has, in consequence of his devotion to the art, been nominated a Lieutenant of the special corps of Italian aviators.

## On Fire in Mid-Air.

WHAT might have resulted in a fatal termination occurred on Monday at Copenhagen. Svendsen, who will be remembered as having flown last summer from Copenhagen to Sweden, was making exhibition flights on a Voisin biplane at the Copenhagen aviation

ground. After attaining a fair height his machine was noticed to be on fire, and, fortunately for Svendsen, the shouts of the onlookers below drew his attention to the danger before it was too late. Although the machine was practically ruined Svendsen was able by great presence of mind to reach terra firma uninjured. Nothing daunted he was soon in the air again with another machine making some excellent flights.

## American Duration Record.

PILOTING a Wright biplane, Parmelee, at San Francisco last week, succeeded in beating the American duration record by flying for 3h. 39m. 49 $\frac{1}{2}$ s. The previous record was 3h. 11m. 55s., made by Welch.

## U.S. Government and Aeroplanes.

LAST week a vote of £26,000 was passed by the Chamber of Representatives at Washington for the purpose of military aeroplanes.

# AIRSHIP NEWS.

## New British Dirigible Pilots.

IT is interesting to notice that at the last meeting of the Committee of the Royal Aero Club two dirigible-pilots' certificates were granted, the successful applicants being Capt. P. W. L. Broke-Smith, R.E., and Lieut. C. M. Waterlow, R.E.

## Instruction Work with "Beta."

BOTH on Monday and Tuesday long flights were made with the Army dirigible, "Beta," in connection with the training of officers, and on Tuesday the airship was under the control of a non-commissioned officer, whose work was supervised by Lieut. Waterlow. On Monday Lieut. Waterlow was in command, and took the airship to Guildford and back, the trip being of about an hour's duration.

## Siemens-Schuckert Airship Appears at Last.

ON Monday the Siemens-Schuckert airship, which has been building for two years, made its first public appearance, and sailed over the German capital for some time. Rising from the ground outside the shed, which has been specially built for it at Biesdorf, the huge airship was steered by Captain Von Krogh over Berlin,

and returned to Biesdorf after about 40 minutes. It carried twelve passengers. The airship, which has been built for military purposes, was actually completed last March, but then it was found that the envelope was not strong enough, and accordingly it had to be taken to pieces and reconstructed. The envelope is some 387 ft. long and 43 $\frac{1}{2}$  ft. in diameter, and has a capacity of 31,000 cubic metres. Three cars are fitted, the centre one being for passengers, while those at the fore and after end of the balloon are for the machinery. Each of these two cars contains two German Daimler motors of 125-h.p., one driving two propellers and the other a single one. There are six propellers altogether. It is claimed that the airship can carry 50 passengers. In a second trial trip on Tuesday of half an hour's duration 14 passengers were actually carried.

## Trial Trip of New Italian Dirigible.

THE new Italian dirigible "Ansonia II," built by Signor Picoli, accomplished a very satisfactory trial trip on Sunday last, cruising from its shed near Verona across the lake of Garda to Montichiari.

# COMPASSES AND AEROPLANES.

IN a recent issue of the *Naval and Military Record* some instructive notes appeared from the pen of an expert upon compasses which at the present moment should commend themselves very much to aviators. The article in question is as follows:—

"The lamentable result of the latest cross-Channel flight, added to at least one narrow escape from a similar disaster, forces one to the conclusion that, however full of pluck, and whatever their qualifications as 'airmen' or engineers may be, the great majority of our leading aviators are sadly lacking in the most elementary knowledge of navigation which would enable them to steer a course from one point with the reasonable prospect of arriving somewhere in the vicinity of another desired spot. The purely navigational problems to be solved may be compared, not unfairly, to those daily faced by captains of low-power steamers or sailing ships. The effects of current, wind, and sea have their parallel in the case of air craft in the variable force and direction of the wind, and this parallel is not so far-fetched as is generally thought when we take into consideration the great speed of the air craft in proportion to the very feeble wind forces in which alone cross-country or overseas flights are at present usually attempted.

"For the present, the aviator must be satisfied with the very simplest navigational instruments, and of these a *sine qua non* should be a reliable compass, properly placed and compensated for surrounding iron. In existing aeroplanes these considerations are absolutely ignored, surprise being expressed, for example, when a compass placed within 6 ins. of the end of a stout movable iron bar does not point correctly!

"The bad reputation that the magnetic compass has apparently earned among aviators is principally due to the very faulty placing from a magnetic point of view, there being no attempt at compensation, and also partially to the use of instruments quite unsuitable to the peculiar conditions

which prevail. This evil reputation is quite undeserved, as the magnetic compass, when treated with the care the seaman has learned to give it, is capable of rising to its new duties. The excessive vibration in some machines is the cause of trouble, but if the naval aviators wish to have a reliable instrument, at any rate for experimenting with, they need go no further than one of the two latest types of small card liquid compasses used in torpedo-boat destroyers, or bridge compasses used in submarines. One of these compasses taken out of its gimbals and packed in a box filled with fibre, wool, or other damping material, will remain perfectly steady under any ordinary conditions.

"Of course, other modifications are desirable, such as increased lightness, simpler and more distinct marking, the use of luminous paint, and in time to come possibly a more elaborate lighting arrangement. Another very desirable innovation would be the use of the new alloy 'duralumin' for steering pedestals, &c., as in addition to many very valuable qualities it is non-magnetic,

"A reliable anemometer for speed and a barometer for height recorder are also necessary to the aerial navigator, these instruments taking the place of the fog and sounding machine of the seaman. Charts on the same projection as those used for sea work, but with the features easily distinguishable from above, shown very prominently, will also be a necessity in the near future.

"It is hardly necessary in this brief article, which will probably only meet the eyes of seamen, to point out that had the above conditions been complied with, the compass could probably be relied on to within a quarter of a point, and in addition had ordinary common-sense allowance for drift been made, such an accident as we have now to deplore should be impossible, and it is to be hoped that naval aviators who are now qualifying will soon be able to show that their sea training has been of use to them in the new element, and that their 'land falls' will be more successful than has been the case hitherto."

## SPEED-ALARMS FOR FLYERS.

### RESULTS OF OUR COMPETITION.

OF the hundred or so designs submitted for our Speed Alarm Competition, forty-two were provisionally approved, and of these we have finally selected five that we are forced to declare equal in merit. Had it been possible, we should have preferred to award the prize for one design only, but the circumstances of the case in our opinion prevent this, and the result is that five competitors share the award.

Fundamentally, the reason why this is so is because no competitor has, so far as we are aware, taken any definite steps to have his ideas put to a practical test, which according to the terms of the competition would have been taken into consideration. We had, therefore, necessarily to judge the merits of different designs purely on their plausibility, and in the light of common knowledge in matters relating to constructive detail. As a result of this necessity, it has been essential to regard certain entirely different sound instruments as potentially equal in merit, on the grounds that either one of them would sufficiently serve the purpose required of it. Such, for example, is the case with the whistle, the bell or gong, and the siren. On the other hand, in the absence of any evidence to show that such simple and well-recognised devices are unsuitable, there is no particular purpose in going out of the way to introduce other principles such as those underlying the action of the musical box or the gramophone, but we do not thereby suggest that such schemes would not work.

Then, apart from the sound instrument itself there is its operation to be considered, and again it is necessary to recognise as equally meritorious the employment of air pressure on a plane, and the use of the rotation of a propeller windmill. Both are plausibly suitable for the purpose required. In connection with the propeller windmill, which is essentially a rotary movement, the introduction of some form of centrifugal governor is more or less a necessity, and may be considered as an incidental part of the system not calling for special recognition on its own account. Thus we have three distinct sound instruments, and two distinct principles of operation that it has seemed to us only fair to recognise as being on a potentially equal footing, and as we have been unable to find any one instrument in either category that deserves to stand out above others in another category we have decided, as already mentioned, to divide the prize in the following way:—

The question of a multiple note alarm, which was suggested initially as being preferable, other things being equal, has not met

with any really satisfactory solution in the competitive designs, and under the circumstances our awards all go to the simple alarms that best fulfil the primary conditions of making one distinctive sound.

The awards are as follow:—

**Whistle.**—No. 31, G. Boocock (published December 17th), for the best design of whistle. The merit in this design lies in its simplicity and in the introduction of the inclined plane for operating a rotary grid valve, which type of valve is well suited for closing a large orifice with a very small movement. The use of the pressure plane in this manner, although only crudely represented in the competitor's sketch, lends itself to a suitable arrangement.

**Siren.**—No. 37, W. Langdon-Davies (published December 24th), for the best siren. The merit in this design lies in its simplicity and in the control of the conditions under which the siren operates. The siren is released by a pressure plate at the required speed and the construction of the members of the sound instrument therein form their own propelling mechanism.

**Gong.**—No. 16, E. V. Gratzke (published September 24th), for the best mechanical bell or gong. The merit in this design lies in its compact arrangement and in the well-considered disposition of its parts.

**Systems of Control.**—Propeller. No. 41, A. E. Rutherford (published December 31st), for the best design of propeller controlled apparatus. The merit of this design lies in its compactness, and particularly in the use of a form of governor that has generally proved itself superior in instruments of an allied character, such as speed indicators for motor cars. The apparatus, as shown, controls the ringing of an electric bell.

**Pressure Plate.**—No. 27, W. Read (published November 26th), for the best design of pressure-plate control. The merit in this design lies in the idea of using two plates of opposite inclination opening under the pressure of the wind like swing doors in a passage. This idea is doubtless superior to a system employing a single plate, as it would seem less liable to be affected by extraneous conditions, inasmuch as both plates have to open equally to effect the control, which in this case consists of closing the electric circuit of an electric bell. Accidental movement of the instrument to one side or the other might jerk one plate against the contact, but it would not probably jerk both plates in opposite directions simultaneously.

The above-mentioned prize winners are requested to communicate with the Editor.



## RADIAL ENGINES.\*

IN any engine the following factors must be observed to eliminate vibration.

1. The centre of gravity of the moving parts should remain stationary. 2. The turning moment must be constant and always positive.

The former condition can be arrived at fairly satisfactorily; but the latter can only be obtained by employing a sufficient number of cylinders or impulses in comparison to the number of revolutions in the crank-shaft in the same interval of time. By so doing we can obtain a fairly constant torque, but the fact must not be lost sight of that the application of the thrust to the crank-shaft must be so arranged that no longitudinal period of vibration is set up.

We have in the purely radial engine no difficulties of longitudinal vibration, as the application of load is all in the same plane and we at once overcome what was at one time a source of some trouble, viz., want of longitudinal balance. Secondly, in the radial engine, balance in other directions is not a difficult matter, and though perfect running balance may not be obtained, the centre of gravity of the moving parts moves in a circular path and does not violently oscillate. If one considers the working of the four-cycle motor it will be noticed immediately that production of energy is only obtained during one stroke of the piston in four; also, all parts which serve to transmit the power—that is, the connecting-rod and crank-shaft—actually do their full work only during the explosion period for which they are calculated. This is a very small fraction of the working stroke, and still smaller of the complete cycle.

We have, therefore, in the radial design several cylinders operating the same crank-pin, and we adopt the disposition

of the said cylinders in star fashion around the crank-shaft of spiral shape.

To reduce the variations of the couple to a minimum it is necessary that the explosions in the different cylinders of such an arrangement succeed each other in absolutely equal intervals, and therefore an unequal number of cylinders must be taken with a minimum of five. The ignition as well has to take place in such a manner that those numbered 2 and 4 fire first, and those unequally numbered afterwards, that is, at the second revolution of the cycle.

The object of a designer is to obtain the greatest possible ratio of cylinder volume to total volume of engine, and in radial construction we have the nearest approach in this respect to the turbine. The complete engine in star shape gives a symmetrical appearance. However, in actual practice this arrangement produces several difficulties, which, although already solved, appear insurmountable. For instance, if we imagine the cylinders separated by a horizontal line passing through the axis of the crank-shaft and we then turn the lower part of the engine about 180°, the cylinders which were below the horizontal line would come above it and fit between the others. Those would be connected to another crank-pin at 180° from the first.

This gives exactly the same turning effect as a truly star-shaped engine and renders lubrication by splash a much simpler problem. The semi-star-shaped engine has another advantage, viz., that it facilitates air-cooling by means of radiating ribs.

This method of cooling in aero-motors has been fully proved, and presents the great advantages of lightness and simplicity. All water-pipes, the radiator, circulating pump, complicated joints, &c., are done away with in company with their weight and tendency to leakage.

\* Abstract of a paper read by Mr. R. W. A. Brewer before the Aviation Section of the A.A. and M.U.



# **CORRESPONDENCE.**

\*.\* The name and address of the writer (not necessarily for publication) MUST in all cases accompany letters intended for insertion, or containing queries.

Correspondents communicating with regard to letters which they have read in **FLIGHT**, would much facilitate ready reference by quoting the number of each such letter.

NOTE.—Owing to the great mass of valuable and interesting correspondence which we receive, immediate publication is impossible, but each letter will appear practically in sequence and at the earliest possible moment.

## **Patents in 1910.**

[1033] Out of a total of 30,403 applications for patents filed at the Patent Office during the past year, including those which resulted in provisional protection only, there were, according to a calculation we have just made, 687 occurring under the heading of "Aeronautics." The full numbers of applications for 1909 and 1908 were 30,603 and 28,598. If the average of foreign applications has been maintained, it will be found that the high proportion of 45 per cent. or thereabouts of the total number of applications will have been from persons resident abroad, most of whom are Germans and Americans. Under our new patent system great difficulty is often experienced in overcoming the preliminary objections of the Examiner, owing to the discovery of previous patents, even though no longer in force, but it is quite the exception for a patent application to be absolutely refused. According to the latest annual report, out of a gross income of £302,000, the Patent Office handed over to the Treasury a net profit of £94,000.

STANLEY, POPPLEWELL AND CO.

## **Neale Control.**

[1034] Although this is rather late in the day, I wish to call your attention to certain articles which have appeared from time to time in your valuable publication concerning the "Neale" system of control.

In your issue of October 8th, 1910, you refer to this control as follows: "The Neale biplane . . . is a machine that certainly does embody a method of control that is, so far as we are aware, quite original."

It may interest you, therefore, to know that in the summer of 1909 Mr. Wilbur Kimball, Secretary of the New York Aeronautical Society, constructed at the Morris Park aerodrome of that Society a full sized biplane controlled laterally by movable vertical panels set between the ends of the main planes. To increase the effectiveness of his invention, Mr. Kimball placed four of these panels on each end of his machine. The aeroplane itself was driven by eight (although I am not positive of this number) small propellers placed in the rear of the planes.

After some practice, Mr. Kimball succeeded in getting off the ground, but one day, when flying low, he had the misfortune to wreck his machine against a fence—not without proving, however, the soundness of his principle.

Early in the autumn, Dr. William Greene, the prominent aviator and manufacturer, came to New York from Ohio to experiment at the grounds of the Society with his Curtiss type biplane. (When I say Curtiss type, I mean that the machine was laterally balanced by the shoulder-fork, and that the machine generally resembled a Curtiss.)

After making many fine flights, in one of which he carried two passengers beside himself, Dr. Greene sold his biplane to Mr. Kimball. The latter removed the ailerons and in their place inserted vertical panels.

The machine was then taken to some small town in New Jersey, presumably Rahway, at which place Mr. Kimball established a private flying ground. Here experiments were carried on with great success, although not much is generally known concerning them.

In the winter of 1910, however, the writer had the good fortune of being one of an aeroplane model class under Mr. Kimball. At one of the meetings of the class, Mr. Kimball remarked that he had recently made a flight of over a quarter of a mile in his machine. By this time, the record has probably been increased.

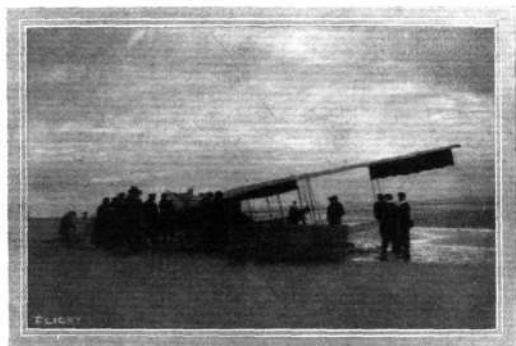
Be that as it may, the fact remains that the so-called "Neale" control was actually flown with in the United States, and in an American machine with an American aviator in 1909. Proof of the above statements may be had from the Aeronautical Society, New York. How long ago Neale first flew with his control in England, I do not, of course, know.

Hoping, as an admirer of your magazine, that you will find space for this letter in its columns.

New York, January 4th. JOHN GUY GILPATRICK.

## **Paterson and King Biplane.**

[1035] I enclose a photo taken at about 4 o'clock on December 31st afternoon, showing the wrecked biplane of Messrs. Paterson and King on the sands at Freshfield. They had flown to Southport (Paterson as pilot and King as passenger and were within about 300 yds. of their hangar on the return



journey and close to the sands about to land, when a sudden gust caught the left plane and drove the right plane into the sand. Fortunately neither were hurt, but the machine was badly smashed as you can see from the photo.

It might be of interest to readers of **FLIGHT**, which I may say I look forward to each week.

Waterloo Park. T. E. C. WILSON.

## **The Dipping Front Edge.**

[1036] I was greatly interested in Mr. Morris' letter (844) in a recent issue of **FLIGHT**, as I also believe that the dipping front edge principle is wrong. Briefly, my arguments are these:

The cyclic up-currents are caused by the action of the sustaining

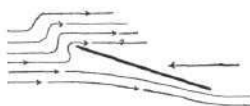


FIG 4.

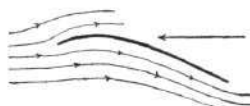


FIG 5.

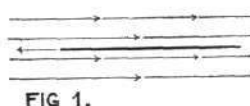


FIG 1.

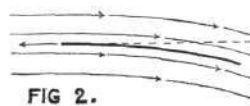


FIG 2.

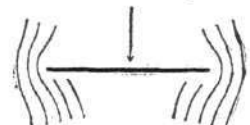


FIG 3.

surface on the air immediately in front of the leading edge. Therefore, by Newton's law, the air in being thus deflected exerts a downward reaction on the aeroplane, which must exactly neutralise the lifting effect due to bringing the up-current back to the horizontal. Thus the net lift due to the up-current is zero.

Also, the theory of the dipping front edge is based on the assumption that since a cyclic current is present with a flat plane it is present if the surface is curved. I maintain that this assumption is not justified. Let a flat plane be moving horizontally as in Fig. 1. In this case there can be no up currents. Now let the rear



edge be bent down as in Fig. 2, the tangent to the leading edge remaining horizontal. The arrangement now constitutes a cambered lifting surface. Yet there can be no cyclic up-currents, for the surface behaves to the air just as the flat plane would, until the air has passed the leading edge.

The presence of a dipping front edge in the wings of soaring birds is no proof that it is advisable for aeroplanes, for a bird is primarily an "ornithopter," not an aeroplane, and again, for a bird to "glide" horizontally a natural upward air current is probably necessary.

Douglas.

A. A. GRIFFITH.

[This question of the dipping front edge is one that causes a great deal of confusion of thought, mainly arising out of initial difficulties in the assumed premises. The fundamental principle from which the advisability of the dipping front edge is deduced is one that is primarily illustrated by Fig. 3 herewith (this and subsequent diagrams being supplementary to those submitted by our correspondent). Fig. 3 shows a flat plane normal to an air stream. It will be observed that the stream lines in the vicinity of the edges move to one side as they approach the plane and leak over the edge in a curved path. This represents the state of affairs when the flat plane in question is falling towards the earth face on, or is otherwise experiencing a relative normal wind.

Now a flat plane in flight being inclined to the direction of flight can either be regarded as virtually falling or in the presence of a virtual normal wind, for it is a fact that the inclined plane causes a downward discharge of air, which is equivalent in effect to an actual motion through the air. It is here that most confusion of thought arises, for in the mind's eye the velocity of flight, being so much greater than the velocity of downward discharge, stands out so predominantly as to obscure a proper appreciation of any phenomena that may be associated with the latter factor. And yet it is a very common explanatory phrase to say that an aeroplane is "virtually falling" all the time that it is flying. If, therefore, this statement is true the cyclic disturbance in the vicinity of the edges due to the virtual fall cannot be neglected, for they will compound with the horizontal velocity, and produce a relative upward trend in the air, as is represented, for instance, in Fig. 4. The object of a plane, used as an aeroplane in flight, is to maintain a uniform downward acceleration of the air, in order to do which it must essentially begin its operation by receiving the air tangentially at its leading edge without shock, whence we have the condition illustrated in Fig. 5, which shows the dipping front edge.

In order to take the matter a little more in detail let us revert once more to Fig. 3, which diagrammatically illustrates the cyclic disturbance at the edges, due to a vertical fall. It is more or less immaterial as to what actual cause we attribute this particular disturbance and we may, for instance, regard the leakage in question as being due to the expansion of air from a region of comparative positive static pressure below the plane into a region of comparative negative static pressure above the plane. We suggest this point of view because we know that many of our readers are much concerned with these differences in the static condition of the air surrounding the plane. In any case, however, the state represented in Fig. 3 is not difficult to believe as true and it can be otherwise deduced as probable from the mere fact that the recognised equation for normal pressure and velocity is quite inadequate to account for the complete interruption of the air stream over the entire area of the plane; it is therefore necessary to suppose that part of the stream leaks over the edges without contributing its proper value on impact.

If the condition represented by Fig. 1 is true at all, it is true for any velocity of fall however small and it must also obviously be true if the plane in question does not happen to be quite normal to the line of fall, for the fundamental conditions can obviously only be affected in degree, and not in principle, by the angle. Thus, for example, suppose the plane represented in Fig. 4 to be falling with the same speed as that represented in Fig. 3, and to have no other velocity, then the conditions represented in Fig. 3 would obtain in Fig. 4 also. If, again, the plane whilst falling has impressed upon it a velocity in a horizontal direction the fundamental conditions are still unchanged, for there is, at any rate, no *primé facie* evidence to show cause for an alteration. Thus we should assume that in the immediate vicinity of the leading edge the compound velocity would give a relative upward trend to the wind, as shown in Fig. 4, itself. As a matter of fact, experiment also serves to show that the stream line does divide below the level of the leading edge, and that the cyclic disturbances are maintained approximately as shown. If the horizontal motion of the plane is accompanied by an actual fall through space the result in practice is known as a glide, but if the angle is sufficiently inclined so that the horizontal velocity infinitely prolongs the actual fall, in other words, the fall is only virtual, then the state in practice represents horizontal flight; but the relative upward trend is there all the same, and the need for a dipping front edge is as great.—ED.]

### "Atherium."

[1037] I am sending you herewith particulars of a new white metal alloy, Atherium, which has recently been brought out, and which I think may interest some of your readers. The properties are rather remarkable. In the first place, it is lighter than aluminium. The specific gravity is 2.4 to 2.57, according to the mixture. Combined with this remarkable lightness the alloy has a tensile strength of 18.66 tons to the square inch. A test made by Mr. R. H. Harry Stanger, of Westminster, on a test piece 0.628 in. in diameter, showed an elastic limit of 33,712 lbs. per square inch, and an ultimate strength of 41,798 lbs. per square inch. The extension on a 2 inch measured length was 17.5 per cent., and the reduction of area was 39.1 per cent. The alloy has the valuable properties of making good sound castings, and works well in rolling and turning. Clean screw threads can be cut, and it can also be soldered, forged, and welded. It does not tarnish or corrode, and withstands the action of sea water. It is also electrically positive. The conductivity is about 55.1. The sale of this alloy is in the hands of Messrs. Pritt, Bowley and Co., 46, Fenchurch Street, London, E.C.

Deptford.

S. P. HUTTON.

### Early Aeronautics.

[1038] I beg respectfully to take the liberty of submitting for your consideration an extract from a work which is in my possession, and which may prove of interest to your readers.

Extract: "Professor Robertson proposes to construct an aerostatic machine, 150 ft. in diameter, to be capable of raising 72,954 kilogs., equivalent to 149,637 lbs. weight (French). To be capable of conveying all necessities for the support of sixty individuals, scientific characters, to be selected by the academicians, and the aerial navigations to last for some months, exploring different heights and climates, &c., in all seasons. If from accident, or wear, the machine elevated above the ocean, should fail in its functions, to be furnished with a ship that will ensure the return of the aeronauts."

Extract (2). "In the year 1840 Mr. Green, the most celebrated aeronaut of modern times, who has performed several hundreds of aerial voyages, proposed making a voyage in a balloon from the American to the European Continent across the Atlantic. In order to convince the scientific public of the practicability of his propelling or directing a balloon, causing it to ascend or descend without discharging either gas or ballast, and in a tranquil atmosphere, to move horizontally and in any direction, he commenced a series of important experiments at the Polytechnic Institution, London, which excited considerable attention and created a great sensation among the curious in scientific matters.

"The machinery made use of by Mr. Green consisted of two propellers attached to a spindle, a rudder, a guide line, and several appendages.

"The propellers appear to have been somewhat like two sails of a windmill, which were whirled round with a rotary motion, and which were intended to produce an effect both on the horizontal progress of the balloon and likewise in elevating and depressing it. The practicability of Mr. Green's plans appears to have been admitted by many scientific gentlemen, and although he has never yet attempted his daring excursion across the Atlantic, yet it is well known that he performed, along with Mr. Mason, in the great Nassau balloon, an aerial voyage from England across the German Sea to Welbury, in Germany, one of the most daring and extensive voyages hitherto attempted, and which was accomplished without the least danger."

The reader will find an account of Mr. Green's experiments in the *Polytechnic Journal* for January and February, 1840, and likewise in the number of the *Mirror* for April, &c., 1840, Vol. 35, with an engraving of the proposed balloon.

Bunbury, W. Australia.

JNO. H. MURRAY.

### The Season for Prizes.

[1039] I am writing to you about a point which I consider is of vital importance.

Up till now the closing date of all the big prizes has been on December 31st. This means that all the aviators are attempting difficult flights towards December, in treacherous winds and foggy weather. There is no reason why the closing date of these prizes should be on December 31st. The football season begins in October and ends in spring; the school year begins in October and ends in summer. Why, then, should not the aviation year begin in October and end in September, or any other suitable months; this would allow aviators, competing for the prizes, to fly in fairly good weather and prevent such accidents as those to Cecil Grace, and to Laffont and Pola and Lieutenant de Caumont in France.

Let us hope to see this plan adopted in the rules of this year's Michelin Cup and any other prizes offered on the lines of the de Forest prize.

Bedford Park.

J. RUET.

[The Royal Aero Club have already passed a regulation whereby all annual competitions for the future must terminate not later than October 31st in any year.—Ed.]

## Speed-Alarm Competition.

[1040] In reproducing the design I submitted, I notice you have mentioned the width of the apertures in the whistle barrel at  $\frac{1}{4}$  in. This should be  $\frac{1}{8}$  in., as stated in the specification sent you, and I shall be glad if you will kindly make the necessary correction.

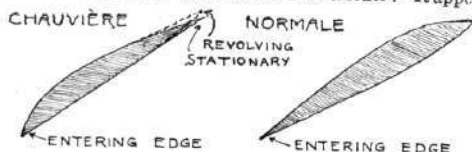
I am aware, of course, that the width of these slots would depend upon the scale of the complete apparatus and this I purposely did not state. At the same time, judging from the size of the sectioned strut, the whistle barrel would be  $\frac{1}{2}$  in. to  $\frac{3}{4}$  in. diameter and  $\frac{1}{4}$  in. slots would be in order.

Moseley.

G. BOOCOCK.

## Propellers.

[1041] Can any readers of your valuable journal give me the reason why the entering edge of a Chauvière tractor is the thinner and that of the Normale the thicker? It appears



to me that when a Chauvière is revolving the attacking surface takes the same form as that of a stationary Normale, as illustrated in accompanying sketch.

W. WEERT.

## Relative Winds.

[1042] I would be much obliged if you could tell me if the following supposition is correct:

Suppose that there is an aeroplane moving forward with a speed which would be 30 m.p.h. in still air. Suppose there is also a wind blowing at right angles to this apparent direction of flight of 20 m.p.h. Is it correct in order to find the resultant direction and speed of the aeroplane to complete the parallelogram of velocity, and draw the diagonal and measure it as is done in a good many mechanical problems?

Croydon.

S. A. HALL.

[It is only correct to use the diagram of the parallelogram of velocities for the purpose of finding the relative velocity and direction of the apparent wind, provided that the aeroplane does not drift but is headed into the wind sufficiently to preserve its course as a whole. If, however, the line of thrust is maintained, say, north and south, so that the machine drifts with the side wind then the side wind has no other effect.

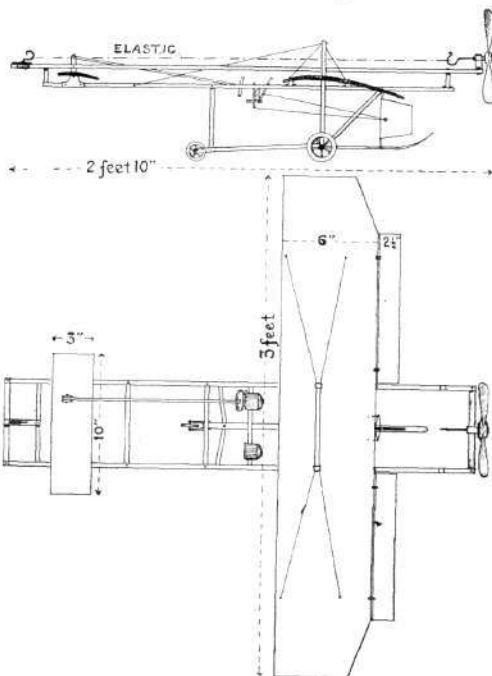
It is necessary to bear in mind in this connection that in practice the machine must be actually headed into the wind in order to counteract drift, consequently there is, one might almost say, no such thing as a side wind unless drift takes place, for it is essential to assume that the aeroplane will offer resistance to the side wind if it feels its effect.

There is a hypothetical case in which it might be supposed that a side wind is counteracted by an independent thrust. Under these circumstances there is an actual relative wind blowing diagonally across the planes of a velocity and direction represented by the diagonal of the parallelogram of forces as suggested in the above letter. The effective value of this resultant relative wind cannot, however, be estimated with any degree of accuracy because the planes are not designed to fly in this attitude. Thus, for example, if we resolve the resultant into its two original components and consider each separately it is quite obvious that the effect of 20 miles an hour flying broadside on will be infinitely superior to the effect of flying 20 miles an hour end-on. In the one case the apparatus represents a proper cambered plane and in the other case it corresponds to a flat plane operating under very inefficient conditions. Unquestionably the end-on flight would result in some supporting effect, but it would not be of corresponding magnitude, and the effect of the resultant would certainly be less than the effect produced under corresponding conditions with the aeroplane heading into the wind and still travelling with its initial velocity on its true north and south course.—Ed.]

## MODELS.

### Model Monoplane.

[1043] I enclose drawings of a model monoplane which I have constructed. The following particulars are:—Span of main planes, 3 ft.; chord, 6 ins.; length of machine, 2 ft. 5 ins. It is driven by



a Chauvière type propeller and 22 strands of  $\frac{5}{16}$  in. strip elastic. The length of the power plant is 2 ft. 10 ins. Weight of machine in working order, 15 ozs.

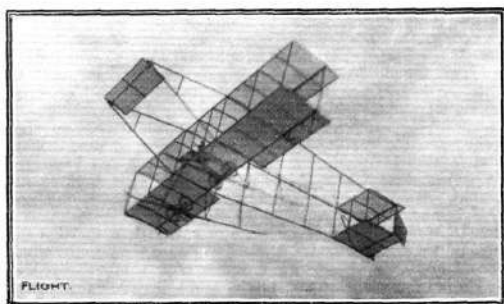
The model rises off the ground, and flies about 30 yards. I hope to get a longer flight than this after a little tuning up.

Lewisham.

ARTHUR F. CHINNERY.

### Farman Model.

[1044] The enclosed photo is an exact scale model H. Farman 1 in. to the foot. It is complete with propeller, dummy engine



petrol tank, &c., and is covered with aero fabric. It is only a show model, and was strung up for the purpose of photographing.

Manchester.

C. H. ASHLEY.

### A Model and its Construction.

[1045] I am going to build a model for long-distance flight, and should esteem it a favour if you would furnish me with a few details necessary for its construction.

1st. If the length was 3 ft., would it be correct if the front plane was 2 ft. 8 ins. and 10 ft. in width?

2nd. What width and length should the back plane have?

3rd. Would it be advisable to camber both planes?

4th. Would a rudder be of disadvantage?

Highbury.

M. MILNE.

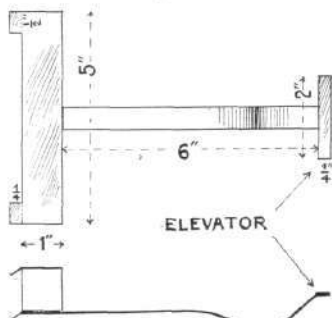
[It is impossible to advise definitely on questions of detail such as whether one length or another length is correct for a model. The only way to get successful results is to bear prominently in mind the fundamental principles at stake. If the problem is to design a model that is to fly the greatest distance, that problem must be re-expressed in terms that apply to the practical difficulties of the case, thus, for example, we may assume that the model is going to be driven by an elastic motor and that the elastic motor is going to have a certain limited amount of energy in proportion to its weight. A few preliminary experiments should be made to ascertain approximately what size of elastic motor could be made and mounted in a suitable frame to give the greatest amount of energy for the least amount of weight. There is generally some mean range of values that gives the best results, because it is more difficult to make something that is exceedingly small or exceedingly large than to make it of ordinary proportions. A recent article in FLIGHT, by Mr. Langdon-Davies, should be of assistance in obtaining an appreciation of the operation of elastic motors.]

Having decided on the weight of the motor, and having estimated an allowance for the weight of the planes and propellers—which should be done, in the light of previous experience with other models, in which it has been found, for example, that the planes weigh as much as the framework carrying the motor, or in which it has been found that there is some other helpful relationship between the weights of different members—it becomes possible to have a fair idea of the probable weight of the model complete. The problem now is to design the planes so that they shall use the power available in the motor with the greatest possible efficiency, and, as an aid to this, some study might advantageously be given to those articles that we have published entitled "Can we fly faster for less power?" They were written in reference to full-sized machines, but, in principle, they are applicable to models, and those who would learn from model construction should study principles.

The gist of the articles in question may be summed up in saying that the plane of least resistance has a camber of about  $5^\circ$ , in other words, it is almost flat, but, and this is the important point, a plane of such little camber will carry very little load unless the speed is very high, and if the speed is very high the body of the machine must be very small and very well designed, otherwise its resistance, which must always be considered as an independent quantity supplementary to the resistance of the planes, will be very high also, and much of the advantage of using a plane of least resistance will be lost. In any case, however, the best practical result is likely to be attained by reducing the loading to the least possible value, in other words the planes should be made as large as possible in proportion to the weight of the machine. In making them large, however, it is very necessary to bear in mind the value of aspect ratio and not seek to make them unduly large merely by increasing the chord.—ED.]

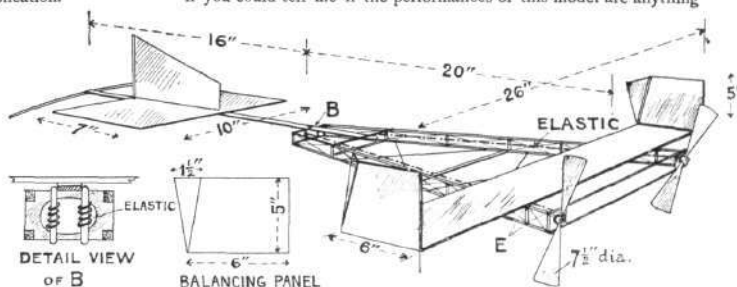
### Paper Gliders.

[1046] I enclose a rough sketch of a small biplane glider, partly my own design, which I hope will be of interest to some of your readers, and that you will consider worthy of publication.



The bend in the main frame is obtained by painting with thin glue, bending, and then left to dry.  
Hull.

C. MARR.



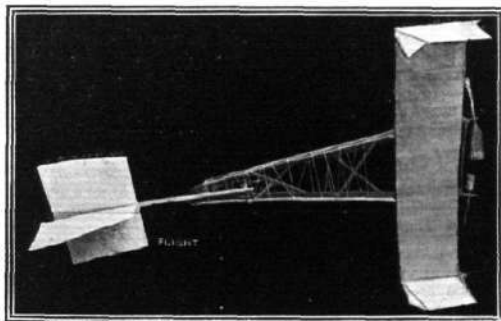
out or the common, and how you consider the idea would work out in actual practice. I consider the problem cannot be solved without the utilisation of some counter resistance, as in the case of the inclined tips of my model or similar devices.

I may say that I have applied for patent protection for this particular model and pattern of main aerofoil.

### Model Twin-Screw Monoplane.

[1047] Enclosed you will find photo and scale drawings of my model aeroplane. The problem I set myself to solve was not so much a question of speed or distance flown as of natural stability. I set myself experimenting with gliders in an atmosphere of tobacco smoke in sunlight, and the result is a model which will fly straight, level, and horizontal. I can launch it blindfolded, and it will fly as far as its motors will make it, at a height of five or six feet from the ground the whole of the journey. It alights flat, and its lateral stability in flight is perfect, and if disturbed by a wind-gust the model recovers itself instantly.

Much of the difficulty which model builders meet with is due to the fact that their model frames are not rigid enough. Unless the



frame is rigid longitudinally, the tension of the elastic alters the relative angle of the main plane and elevator, and so causes the model to either rise unduly or dip disastrously.

In my model the frame is built girder fashion out of  $\frac{1}{8}$  in. by  $\frac{1}{8}$  in. satin walnut. The elastic is inside the frame, and no bending of the frame is perceptible with 250 turns on the propellers.

At 250 turns the model flies 130 ft. The propellers are  $7\frac{1}{2}$  ins. diameter,  $1\frac{1}{2}$  ins. across the blades, and  $\frac{3}{8}$  in. pitch. Eight yards of elastic to each propeller.

The great stability of this model is due to the fact that at either end of the main aerofoil is built at right angles an erect panel. This panel is the same width as the main plane, and one-fifth to one-sixth as high as the aerofoil is long.

These panels, if plain, give some little increased stability, but their action is increased greatly, almost incredibly even, when their entering edges are inclined inwards and downwards, in a manner impossible to describe verbally, but which may be seen at a glance in the print. The dimensions of this triangular plane are very important. If too large it acts as a brake and elevating-plane combined. This elevating action is so marked that the "elevator" in front has no angle, but is practically flat.

The angle, however, can be found by adjusting the screw at B, and pressing the wedge either in or out as required.

The main plane rests at E, on two  $\frac{1}{8}$ -in. blocks giving that amount of front elevation, and the camber is  $\frac{1}{2}$  in.

The weight of this model works out at  $4\frac{1}{2}$  ozs. I should be glad if you could tell me if the performances of this model are anything

